



Important Information

For Your Safety

The power switch turns the DVD Video Camera on and off, leaving the date/time feature unaffected. If the video camera is to be left unattended for a long period of time, turn it off.

WARNING : TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.

WARNING : TO PREVENT FIRE OR SHOCK HAZARD, USE THE RECOMMENDED ACCESSORIES ONLY.

The DVD Video Camera and AC adaptor/charger have the following caution marks.



CAUTION

RISK OF ELECTRIC SHOCK
DO NOT OPEN



CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT OPEN. NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

Precautions

WARNING: Many television programmes and films are copyrighted. In certain circumstances, copyright law may apply to private in-home videotaping of copyrighted materials.

The liquid crystal display (LCD) panel is made by highly precise technology. More than 99.99% of its picture elements (pixels) are effective, but some (less than 0.01%) may appear as coloured bright dots. This does not indicate a fault as the LCD panel stretches the limits of current technology.

Identifications of caution marks



This symbol warns the user that uninsulated voltage within the unit may have sufficient magnitude to cause electric shock. Therefore, it is dangerous to make any kind of contact with any inside part of this unit.



This symbol alerts the user that important literature concerning the operation and maintenance of this unit has been included. Therefore, it should be read carefully to avoid any problems.

WARNING: To prevent risk of injury or damage to your DVD Video Camera and the AC adaptor/charger, use only the CGA-DU14/CGA-DU21 battery and VSK0631 AC adaptor/charger.

**CLASS 1
LASER PRODUCT**

CAUTION

This product contains a laser diode of higher class than 1. To ensure continued safety, do not remove any covers or attempt to gain access to the inside of the product. Refer all servicing to qualified personnel.

As this equipment gets hot during use, operate it in a well-ventilated place; do not install this equipment in a confined space such as a bookcase or similar unit.

To reduce the risk of fire, electric shock or product damage, do not expose this equipment to rain, moisture, dripping or splashing and ensure that no objects filled with liquids, such as vases, shall be placed on the equipment.

DVD Video Camera

- The rating plate is on the surface of the Video Camera.

AC Adaptor

- The rating plate is on the underside of the AC Adaptor.

Be sure to read the following before opening the package of CD-ROM

This Agreement will take effect at the moment you open the package of the storage device (CD-ROM) provided with this product, if you agree to the terms herein.

If you do not accept the terms of this Agreement, immediately return the unopened package of storage medium and enclosed materials (printed matter, external package, and all others) to your dealer, or return only the package of storage medium to your dealer.

This License Agreement certifies that you were granted license in the past.

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- (b) Although This Software contains several components that can be run on computer as independent functions, all components are licensed as a single product: You may not, by any means, use these components on different computers at the same time.

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The copyrights of This Software, attached manual, etc. are owned by the following corporations, and are protected by copyright laws in Japan and USA, as well as by other intellectual property and international properties:

Name of Software	Copyright Owners
USB Driver	Hitachi, Ltd.
DVD-RAM Driver	Matsushita Electric Industrial Co., Ltd.
DVD-MovieAlbumSE	Matsushita Electric Industrial Co., Ltd.
MyDVD	Sonic Solutions

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- (d) Duplication and/or distribution of any files on this storage medium for commercial use is prohibited.

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Under no circumstances will Matsushita Electric Industrial Co., Ltd. Hitachi, Ltd., or Sonic Solutions accept any responsibility for any damages you may incur from using or being unable to use This Software (including, but not limited to, loss of business profit, interruption of business, loss of business information, or other monetary damages).

Article 5 Termination of Agreement

If you fail to comply with the terms of this Agreement, Matsushita Electric Industrial Co., Ltd. Hitachi, Ltd., and Sonic Solutions reserve the right to terminate the Agreement. In such a case, you will be obliged to discard all copies of This Software and its components.

Article 6 Prioritized License Agreement

When some software programs are installed, the license agreements will be displayed (to be referred to as online license agreement).

If the online license agreement conflicts with this Agreement, the online license agreement shall have a priority.

Cautions When Using

Handle the liquid crystal display (LCD) with care:

- The LCD is a very delicate display device: Do not press its surface with force, hit it or prick it with a sharp object.
- If you push the LCD surface, unevenness in display may occur. If unevenness does not disappear soon, turn the DVD Video Camera off, wait for a few moments, and then turn it on again.
- Do not place the DVD Video Camera with the open LCD screen down.
- Close the LCD monitor when not using the DVD Video Camera.

Liquid crystal display and viewfinder:

- The LCD screen and viewfinder are the products of highly precise technology. Among the total number of pixels (approx. 120,000 pixels for LCD monitor and approx. 110,000 pixels for viewfinder), 0.01% or less pixels may be missing (black dots) or may remain lit as coloured dots (red, blue, green). This shows the limitations of the current technology, and does not indicate a fault that will interfere with recording.
- The LCD screen and viewfinder will be slightly dimmer than usual when the DVD Video Camera is at low temperature, as in cold areas, or immediately after power is turned on. Normal brightness will be restored when the temperature inside the DVD Video Camera rises.

Hold the DVD Video Camera correctly:

- Do not hold the viewfinder or LCD monitor when lifting the DVD Video Camera: The viewfinder or LCD monitor could detach and the DVD Video Camera may fall.

Do not subject the DVD Video Camera to impact:

- This DVD Video Camera is a precision machine. Take great care that you do not strike it against a hard object or let it fall.
- Do not use the DVD Video Camera on a tripod in a place where it is subject to severe vibrations or impact.

No sand or dust!

- Fine sand or dust entering the DVD Video Camera or AC adaptor/charger could cause malfunctions or defects.

No water or oil!

- Water or oil entering the DVD Video Camera or AC adaptor/charger could cause electric shock, malfunctions or defects.

Heat on surface of product:

- The surface of the DVD Video Camera will be slightly warm, but this does not indicate a fault.

Screen on connected TV:

- Never leave the disc navigation screen, still image or camera image displayed on your TV to which the DVD Video Camera is connected: Doing so could result in displayed image retention or phosphor degradation of TV screen.

Be careful of ambient temperature:

- Using the DVD Video Camera in a place where the temperature is over 40°C or under 0°C will result in abnormal recording/playback.
- Take care that the temperature of this DVD Video Camera, when connected to PC, does not rise excessively (reference for usage: approx. 30 minutes at about 30°C).
- Do not leave the DVD Video Camera on beach sand or in a closed vehicle where the temperature is very high for a long time: This could cause malfunctions.

Do not point directly at the sun:

- If direct sunlight strikes the lens or viewfinder, the DVD Video Camera could malfunction or a fire could occur.
- Do not leave the DVD Video Camera with the LCD screen exposed to direct sunlight: This could cause malfunctions.

Do not use the DVD Video Camera near TV or radio:

- This could cause noise to appear on the TV screen or in radio broadcasts.

Do not use the DVD Video Camera near strong radio waves or magnetism:

- If the DVD Video Camera is used near strong radio waves or magnetism, such as near a radio wave tower or electric appliances, noise could enter video and audio that are being recorded. During playback of normally recorded video and audio, noise may also be present in picture and sound.
At worst the DVD Video Camera could malfunction.

Do not expose the DVD Video Camera to soot or steam:

- Thick soot or steam could damage the DVD Video Camera case or cause malfunctions.

Do not use the DVD Video Camera near corrosive gas:

- If the DVD Video Camera is used in a place where there is dense exhaust gas generated by gasoline or diesel engines, or corrosive gas such as hydrogen sulfide, the external or internal terminals could corrode, disabling normal operation, or the battery connecting terminals could corrode, so that power will not turn on.

Do not use the DVD Video Camera near ultrasonic humidifier:

- With some water in humidifier, calcium and other chemicals dissolved in water could scatter in the air, and white particles could adhere to the optical head of the DVD Video Camera, which could cause it to operate abnormally.

Do not expose the DVD Video Camera to insecticide:

- Insecticide entering the DVD Video Camera could dirty the lens in laser pickup block, and in such a case the DVD Video Camera might not operate normally. Turn the DVD Video Camera off and cover it with vinyl sheet, etc. before using insecticide.

Do not use a generally available 8 cm CD lens cleaner:

- Cleaning the lens is not necessary when using this DVD Video Camera in the usual way.
- Using 8 cm CD lens cleaner could cause this DVD Video Camera to be faulty.

Do not touch the lens in laser pickup block:

- If you touch the lens in laser pickup block directly, it may cause malfunctions. Laser pickup block is not a compensable part. Therefore, pay much attention when operating this camera.

Be careful of moisture condensation:

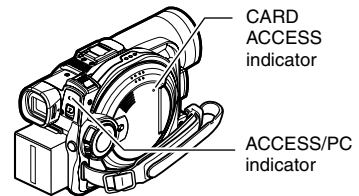
- When you move the DVD Video Camera between places where the difference in temperatures is great - such as entering a lodge from a ski slope or going out of a cooled room or vehicle - condensation (vapour in air warmed or cooled to water droplets) could occur on the lens and/or inside the DVD Video Camera. If condensation occurs, do not open the cover of disc or card insertion block if possible. If condensation occurs on the lens, wipe it off with a soft, dry cloth. Even if the external surface of DVD Video Camera has dried, condensation may remain inside: Turn the DVD Video Camera off and leave it in a dry place for at least 1-2 hours before using it again.

Do not use the DVD Video Camera for a long uninterrupted period of time:

- This DVD Video Camera cannot be used for a long time continuously as a surveillance camera/monitor. If you use the DVD Video Camera for a long continuous period of time, the temperature of DVD Video Camera could exceed a limit and the recording/playback operation could be slowed down: In this case, turn it off and wait for a while before using it again.
- Take care that the temperature of this DVD Video Camera, when connected to PC does not rise excessively (reference for usage: approx. 30 minutes at about 30°C).

Do not turn the DVD Video Camera off while the ACCESS/PC indicator or CARD ACCESS indicator is lit or blinking:

- The ACCESS/PC or CARD ACCESS indicator is lit or blinking to show that data is being written to disc or card, or being read from it. At this time, do not do any of the following, so as not to damage the data:
 - Remove battery
 - Disconnect AC adaptor/charger
 - Plug or unplug PC connection cable
 - Remove disc or card
 - Subject DVD Video Camera to severe vibrations or impact.
 - Violently open or close the LCD monitor



If you turn the DVD Video Camera off while the ACCESS/PC or CARD ACCESS indicator is lit or blinking, turn it on again with the disc or card loaded in it: Repair of the disc or card will be executed automatically (see page 145).

Do not wipe the DVD Video Camera case with benzene or thinner:

- The coating of case could peel off or the case surface could deteriorate.
- When using a chemical cleaning cloth, follow the instructions.

Also read the instructions attached with optional accessories:

- For optional accessories, observe the cautions and follow instruction manuals attached.

Keep the Memory Card out of reach of children to prevent swallowing.

Cautions When Storing

Do not leave the DVD Video Camera in a place where the temperature is very high for a long period of time:

- The temperature inside a closed vehicle or boot can become very high in a hot season. If you leave the DVD Video Camera in such a place, it could malfunction or the case could be damaged. Also, do not expose the DVD Video Camera to direct sunlight or place it near a heater.

Do not store the DVD Video Camera in a place where the humidity is high or in a dusty place:

- Dust entering the DVD Video Camera could cause malfunctions. If the humidity is high, the lens could be mouldy, and the DVD Video Camera could become inoperable. It is recommended that you put the DVD Video Camera with desiccant in a box when storing it in a closet, etc.

Do not store the DVD Video Camera in a place subject to strong magnetism or intense vibrations:

- This could cause malfunctions.

Detach the battery from the DVD Video Camera and store it in a cool place:

- Leaving the battery attached or storing it at high temperature could shorten its life.

Suggestions and Restrictions

Make a trial recording:

- Always make a trial recording before doing actual recording to make sure that recording is normal. The data that have not been stored normally because of a defect in the DVD Video Camera cannot be restored.
It is recommended that you use DVD-RAM disc from which recorded contents can be deleted for trial recording.

The recorded contents cannot be compensated for:

- Panasonic cannot compensate for any damages caused when recording is not made normally or recorded contents cannot be played back because of a defect in the DVD Video Camera, disc or card. Also, Panasonic cannot be responsible for your recorded video and audio.
- If you or a third party make a mistake when handling this DVD Video Camera, disc, card, etc., the recorded contents may be lost. We cannot be responsible for compensation for damage due to loss of recorded contents.

Copyright:

- Data recorded on the disc or card in this DVD Video Camera using other digital/analog media or devices are protected by the copyright act and cannot be used without permission of the owner of copyright, except for personal enjoyment. Be aware that recording is restricted for some demonstrations, performances and exhibitions, even for personal enjoyment.

Do not use the DVD Video Camera for professional applications:

- This DVD Video Camera is designed and produced for home-use recording and playback.

Read This First

To guide you, we've included following six chapters.

- The section on "Setups" explains how to set up the DVD Video Camera, battery, and set the date/time.
- The section on "Basic Techniques" explains the basic operation of this DVD Video Camera—recording of movies, still images, and playback of recorded images.
- The section on "Advanced Techniques" explains settings on this DVD Video Camera for more advanced usage.
- The section on "Disc Navigation" explains editing with Disc Navigation: Refer to this section when finalising DVD-R disc and initialising DVD-RAM disc.
- The section on "Installing Software" explains the contents of provided CD-ROM and how to install the contained software included.
- "Subsidiary Information" includes an introduction to products sold separately, proper cleaning, and troubleshooting.

We want this manual to be as helpful as possible, so it includes two easy ways to find the information you need:

- A quick index for the information you use most often (this page).
- A detailed table of contents directing you to specific information quickly (see page 13-15).

Get to know your DVD Video Camera by using this manual, and get to know Panasonic. We appreciate your business.

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With this DVD Video Camera you can view the picture being recorded or the playback picture whether on the LCD monitor or in the viewfinder. Opening or closing the LCD monitor switches the picture to appear on the LCD monitor or in the viewfinder. The following text describes the operation assuming that the viewfinder is used as a major monitor device.

About This Manual

● Displays in this manual

Understand that the displays are different from those you will actually see in the viewfinder or on the LCD screen.

● Notation of cancel button

Press the stop/cancel button to stop your operation midway, or return the menu screen to the preceding one. The expression “press the ■ button” will be used in this text.

● **RAM**, **R** and **CARD** marks beside headings

Some functions of this DVD Video Camera are unavailable with disc or card used. Refer to the marks at right above each function to identify whether the disc or card is compatible with the function. Refer to these marks and identify the functions and operation to match the disc or card you use.

● Illustrations in this manual

Although the external appearances of VDR-M50GC and VDR-M70GC are different, the method of operating both models is identical.

The illustrations of VDR-M70GC are used for the explanation in this text.

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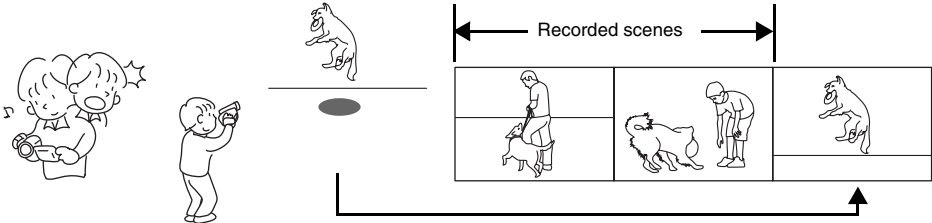
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Introduction

●You can record even during playback

Unlike tape devices, you do not need to search for the recording start position or locate the beginning of blank portion.

You can start recording during playback: New recording will not overwrite any previously recorded data.



If you stop playback midway and start recording, overwrite will not occur.

●You can immediately play back desired recorded scenes

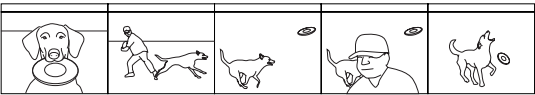
You do not need to rewind, unlike recorders using tape.

You can select any scene you want and immediately play it back (using Disc Navigation function).

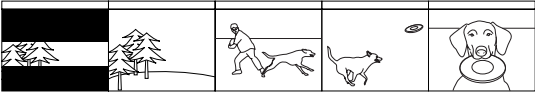
●Use Disc Navigation to create your original movie

You can delete unnecessary scenes, move any scenes, etc., and create your original movie work (PlayList).

Before editing



After editing

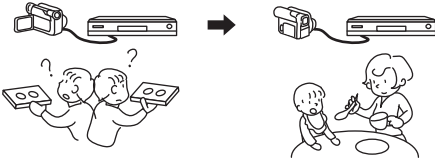


● You can easily edit scenes, which is quite difficult with tape

Using this DVD Video Camera, you can collect scenes of your child, for example, on play list of Disc Navigation function and create an original movie: Then simply play back the play list and dub it on VCR. It is also easy to make any number of identical tapes.

Up to now, you had to repeatedly press buttons

With DVD, you can simply play back this DVD Video Camera, and press the record button on VCR.



● Create original DVDs on PC

You can use a DVD-R disc to create an original DVD, using the provided software CD-ROM. The created DVD disc can be played back on DVD player, DVD-ROM drive, etc.

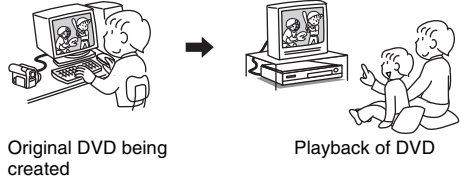


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Installing Software

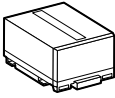

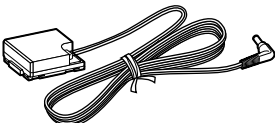
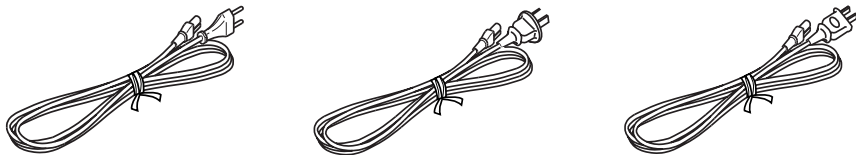
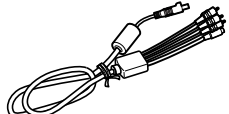
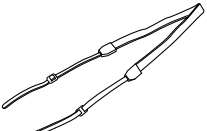
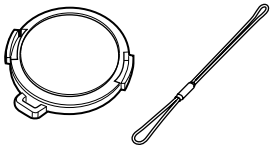
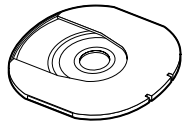
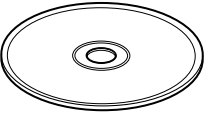
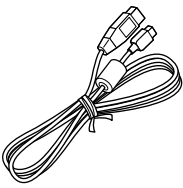
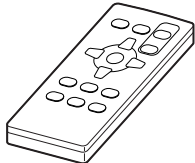
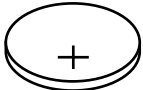
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Subsidiary Information

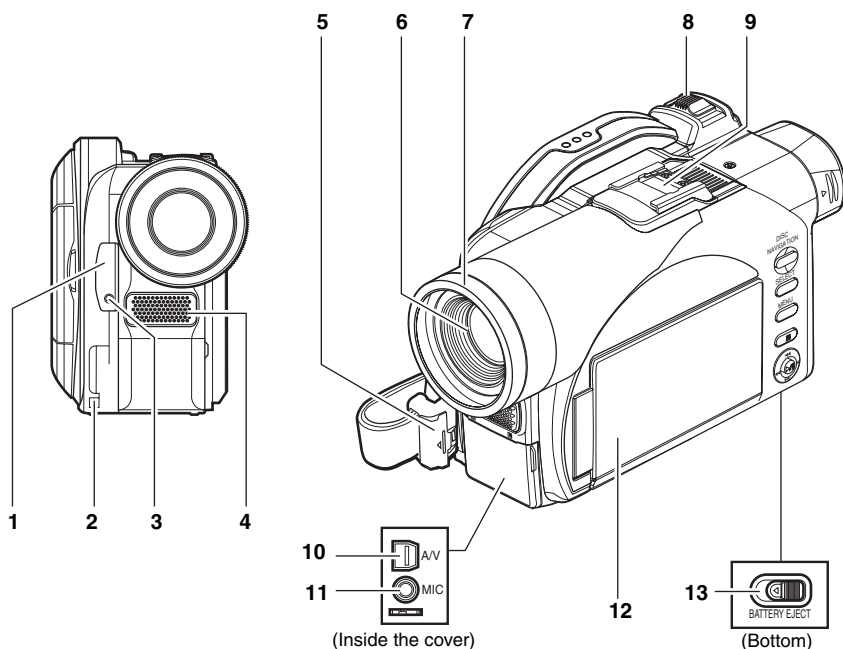
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Checking Provided Accessories

Make sure that you have all the following accessories in package:

<p>Battery: Portable power supply for this DVD Video Camera. Charge it before use.</p> 	<p>AC adaptor/charger: Used to power the DVD Video Camera from AC outlet, or charge battery.</p> 	<p>DC power cord: When powering the DVD Video Camera from household AC outlet, use this cord to connect the DVD Video Camera and AC adaptor/charger.</p> 
<p>Mains lead: Connect between household AC outlet and AC adaptor/charger.</p> 		
<p>AV/S input/output cable: Used when viewing the picture played back on the DVD Video Camera on TV screen, or output video to another video device.</p> 	<p>Shoulder strap: Attach to the DVD Video Camera to hang it from shoulder.</p> 	<p>Lens cap and lens cap string: Attach the lens cap when not recording, to protect the lens.</p> 
<p>8 cm DVD-RAM disc 8 cm (in Round DVD Holder): To record video (movie) on this DVD Video Camera</p> 	<p>Software CD-ROM: Use this CD-ROM when connecting the DVD Video Camera to PC.</p> 	<p>USB cable:</p> 
<p>Infrared remote control: Use to control the DVD Video Camera from a distance.</p> 	<p>Lithium battery: To power the remote control.</p>  <p>WARNING: Keep this battery away from children. If swallowed, consult a physician immediately for emergency treatment.</p>	

Names of Parts



1 Infrared receiver (P. 35)

When the remote control is used to operate the DVD Video Camera, this receiver will receive the infrared signal.

2 Lens cap string attachment hole (P. 33)

3 Recording indicator (P. 88)

The red indicator will light during recording.

4 Internal stereo microphone (P. 49)

5 Lock cover and Lock button (P. 32)

6 Optical 10x zoom lens (VDR-M70GC) Optical 18x zoom lens (VDR-M50GC) (P. 55)

7 Lens hood (P. 56)

Always remove this lens hood when using generally available tele-conversion or wide-conversion lens.

8 Zoom lever (P. 55)

Push the lever to the T side for telephoto, or to the W side for wide-angle.

9 Hot shoe (P. 65)

Only for VDR-M70GC:
Attach the optional video flash here.

10 AV input/output jack (P. 66)

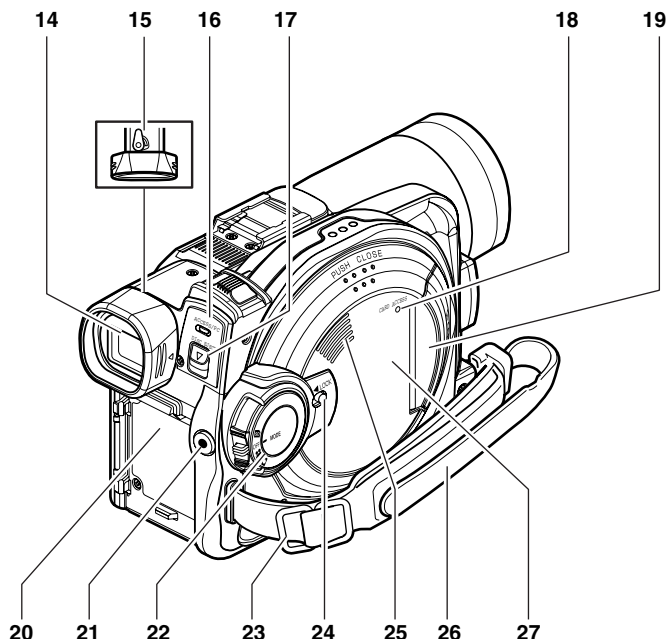
11 External microphone jack (P. 65)

12 2.5" type liquid crystal display (inside) (P. 4, 36)

13 BATTERY EJECT switch (P. 40)

The BATTERY EJECT switch is located on the bottom of this DVD Video Camera: Slide it when removing the battery.

Although the external appearances of VDR-M50GC and VDR-M70GC are different, the method of operating both models is identical. VDR-M70GC illustrations are used in this manual.



14 Viewfinder (P. 4, 35)

15 Dioptre control (P. 35)

To adjust the focus of image appearing in the viewfinder. (Pull out the viewfinder.)

16 ACCESS/PC indicator (P. 6, 49, 50)

Will blink or light when the disc in DVD Video Camera is accessed (write or read is executed) or the DVD Video Camera is connected to PC.

17 DISC EJECT lever (P. 44)

Press and release this lever to open the disc guide.

18 CARD ACCESS indicator (P. 6, 50)

19 Card insertion block (P. 47)




20 Battery attachment platform (P. 40)


21 Record (REC) button (P. 49)

22 Power switch (P. 48, 49, 50)

23 Shoulder strap holders (P. 33)

24 LOCK switch (P. 23, 49)

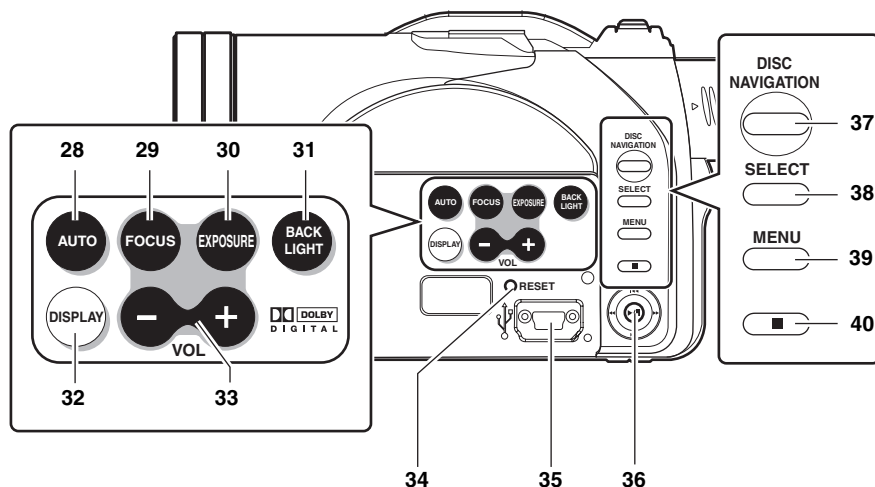
In  mode, set the LOCK switch to  (to the left) to lock the power switch so that it does not accidentally move to .

From  mode, you cannot move the LOCK switch to the left to lock the power switch.

25 Speaker (P. 57)

26 Hand strap (P. 32)

27 Disc insertion block (P. 44)



28 FULL AUTO button (P. 64)

To switch the DVD Video Camera to full automatic.

29 FOCUS button (P. 62)

To switch between manual focus and auto-focus.

30 EXPOSURE button (P. 63)

Press this button to adjust the exposure.

31 BACK LIGHT (backlight compensation) button (P. 51)

Press this button when subject is being lighted from rear.

32 Screen display button (DISPLAY) (P. 61)

Press this button to display the details of image being played back or camera setting status, or switch the display off.

33 Volume control buttons (VOL)/⊖ ⊕ buttons (P. 57, 62, 63)

To adjust the volume of sound from speaker, etc.

34 RESET button (P. 160)

To reset all settings to defaults (status when the DVD Video Camera was shipped from the factory).

35 USB port (To PC)

36 Joystick (P. 38, 57, 75)



Move the joystick to select a scene or menu item, and then press the centre (▶/||) to play back the scene, pause it, or designate an option of the menu.

37 DISC NAVIGATION button (P. 90)

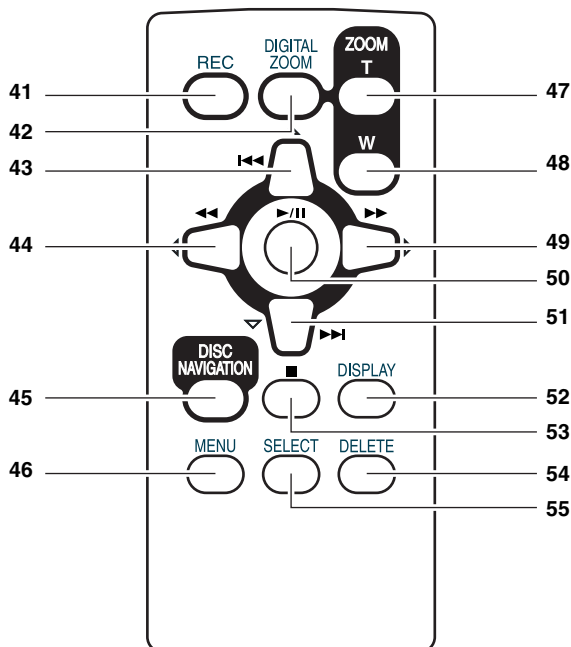
38 SELECT button (P. 93)

39 MENU button (P. 38, 74, 96)

Press this button to display the menu for setting camera functions and Disc Navigation. The camera menu will appear even if disc is not loaded.

40 Stop/cancel button (P. 10, 57, 92)

To end playback or cancel setting of menu.



41 REC button (P. 49)

42 DIGITAL ZOOM button (P. 55)

43 Reverse skip button (P. 59)

44 Reverse search button (P. 58)

45 DISC NAVIGATION button (P. 90)

46 MENU button (P. 38, 76, 97)

47 ZOOM T button (P. 55)

48 ZOOM W button (P. 55)

49 Forward search button (P. 58)

50 Play/pause button (P. 57)

51 Forward skip button (P. 59)

52 DISPLAY button (P. 61)

53 Stop button (P. 10, 57, 92)

54 DELETE button (P. 96)

55 SELECT button (P. 93)

* The buttons on remote control will function the same as those on DVD Video Camera.

Setting Up the Battery

The CGA-DU14 battery provided with this DVD Video Camera has not been charged at purchase time: Charge it before using the DVD Video Camera.

Note:

- Be sure to use the CGA-DU14/CGA-DU21 battery for the DVD Video Camera: Using other batteries could cause the DVD Video Camera to malfunction, or result in fire.
- Be sure to use the VSK0631 AC adaptor/charger to charge the battery: Using other chargers could cause electric shock or fire.
- Charge the battery at temperatures of 10-30°C.

Charging Battery

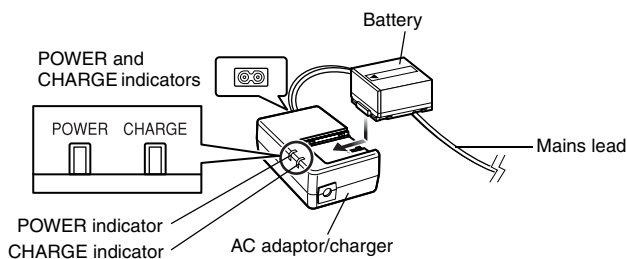
Use the provided AC adaptor/charger to charge the battery.

- 1 Connect the mains lead to AC adaptor/charger.
- 2 Plug the mains lead into AC outlet.
- 3 Attach the battery to AC adaptor/charger.

The CHARGE indicator on AC adaptor/charger will light.

Note:

When charging a battery, unplug the DC power cord from the DC output jack on AC adaptor/charger.



● Battery charged status

You can find out the charged status of battery by checking the CHARGE indicator on AC adaptor/charger:

Charge status	CHARGE indicator
During charge	Lit
Charge complete	Goes out

Note:

- If the CHARGE indicator does not light when the AC adaptor is plugged into household AC outlet, unplug it from household AC outlet, wait a few moments, and then plug it into household AC outlet again. If the CHARGE indicator still does not light, the AC adaptor may be faulty. Unplug it from household AC outlet and consult your dealer.
- See "Troubleshooting" on page 153 when the CHARGE indicator blinks.

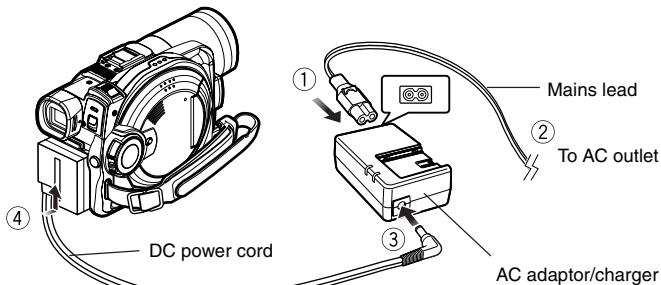
Try to Record and Play Back Using Disc (Video and Photo)

Before You Begin

- It is recommended that you use a DVD-RAM disc for trial recording, since you can delete the recorded contents (See page 26).

You can record both videos and photos on DVD-RAM disc; only videos on DVD-R disc.

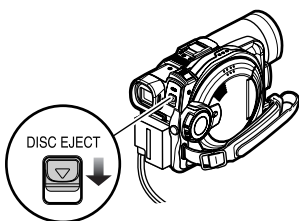
1 Connect a power supply (P. 43).



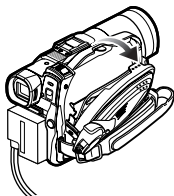
Connect them in sequence of the digits.

2 Insert a disc (P. 44).

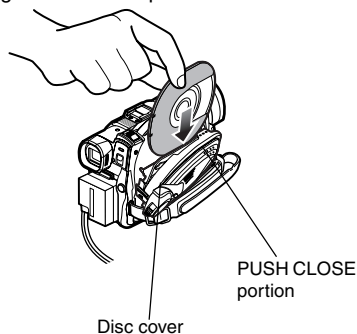
- Press down the DISC EJECT lever once and release it.



- Gently open the cover until it stops.

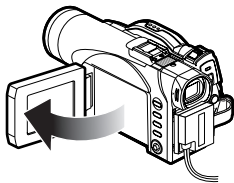


- Insert the disc, in Round DVD Holder, into the disc guide until it stops.

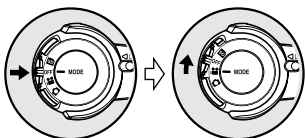


3 Start recording (P. 49).

1. Open the LCD monitor (See page 36).

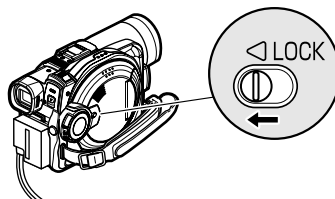


2. While holding the switch at the centre of power switch, set the switch to “” or “”.



3. Set the LOCK switch to (to the left) to prevent accidental switching of recording mode.*

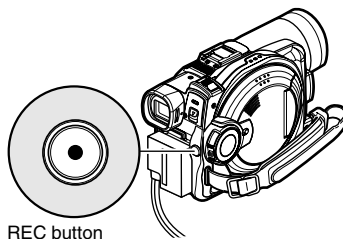
* Only in mode.



4. Press the REC button.

Recording will start.

Pressing the REC button again will stop recording.



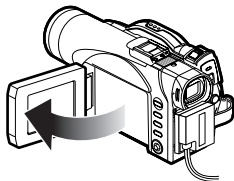
Note:

When using an unformatted disc, format (initialise) it on this DVD Video Camera.

If unformatted disc is inserted into this DVD Video Camera, a message will appear: Format the disc following the instructions on screen (P. 45, 121). Initialising the disc will erase all the recorded contents: Make sure the contents on disc are not valuable before initialising the disc.

4 View the playback of recorded content on LCD monitor screen.

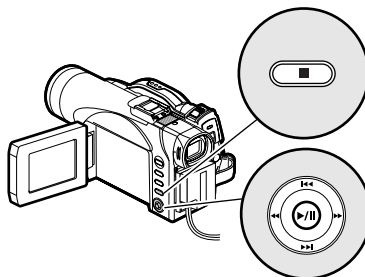
1. Open the LCD monitor (See page 36).



2. After recording is finished, press the button.

The recorded scene will be played back.

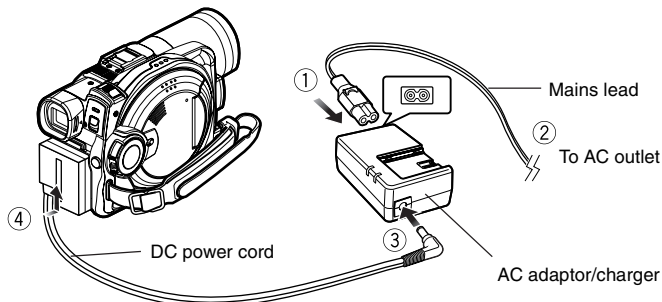
3. Press the button to stop playback.



Try to Record and Play Back Using Card (Photo)

Only photos can be recorded on card.

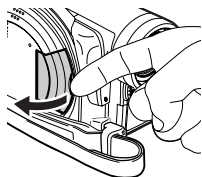
1 Connect a power supply (P. 43).



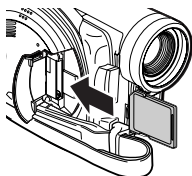
Connect them in sequence of the digits.

2 Insert a card (P. 47).

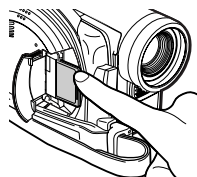
1. Open the cover of card insertion block with power turned off.



2. Put in a card.

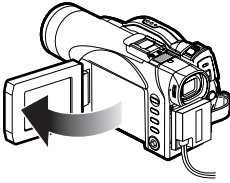


3. Insert the card all the way until it locks.

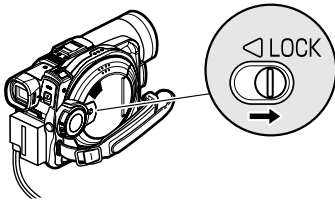


3 Start recording (P. 50).

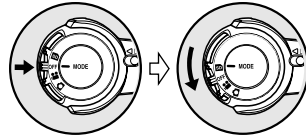
1. Open the LCD monitor (See page 36).



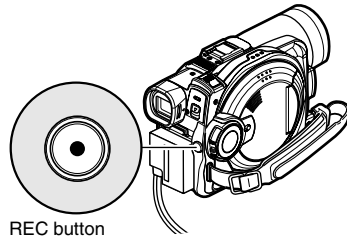
2. Set the LOCK switch to  (to the right).



3. While holding the switch at the centre of power switch, set the switch to "SD".

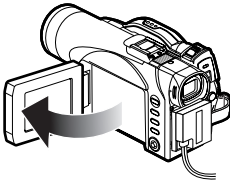



4. Press the REC button.
Pressing REC once will record one photo.



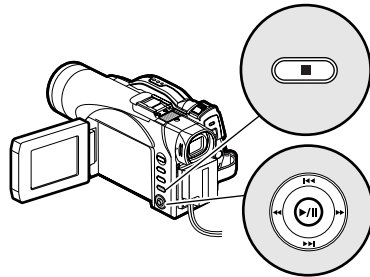
4 View the playback of recorded content on LCD monitor screen (P. 57).

1. Open the LCD monitor (P. 36).



2. Press the  button in recording pause status: The recorded scene will be played back.

3. Press the  button to stop playback.



Discs and Cards

The following table lists the storage media (discs and cards) that can be used on this DVD Video Camera and the functions which are available with them:

Function	DVD-RAM disc	DVD-R disc	SD Memory Card/ MultiMediaCard
Recording movie	∴	∴	—
Recording still	∴	—	∴
Deleting recorded image	∴	—	∴
Editing on this DVD Video Camera	∴	—	—
Playback on DVD player	—*1	∴*2	—
Playback on DVD-RAM recorder	∴*3	∴*2	—*4

∴ : Functions available; — : Not available

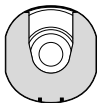
*1: Can be played back on DVD players with the  mark.



*2: Must be finalised (see "Terminology", P. 165) on this DVD Video Camera before DVD-R disc can be played back on DVD player or DVD-RAM recorder (See page 123). May not be playable on some DVD players.

*3: Compatible with DVD video recorders that conform to 8 cm DVD-RAM.

*4: Some DVD video recorders incorporate a device that can play back SD Memory Card and multimedia card.

Available Discs



Usable discs and logos		Shape
DVD-RAM Ver. 2.1 (8 cm)		In Round DVD Holder
DVD-R [for General Ver. 2.0 (8 cm)]		

This DVD Video Camera uses 8 cm DVD-RAM discs and 8 cm DVD-R discs for camcorder use. Discs removed from Round DVD Holder cannot be used on this DVD Video Camera: Use them only in the holder. Do not insert a bare disc removed from the holder into the DVD Video Camera: It will not be removable.

- The Round DVD Holder cannot be used on the DVD Video Cameras that use square type adaptors.
- Image data edited on PC and certain types of image data may not be visible on this DVD Video Camera.
- The image data recorded on another device may not be playable on this DVD Video Camera.

Note:

- It is recommended that you use Panasonic discs, since their compatibility with this DVD Video Camera has been confirmed. Using a disc other than those made by Panasonic may not allow the DVD Video Camera to deliver optimum performance.
- It is necessary to initialise an unformatted disc. When an unformatted disc is inserted into the DVD Video Camera, a message will appear: Initialise the disc following the instructions on screen (P. 121).

Information on DVD-R Disc

You cannot record a still on DVD-R disc, or delete any recorded images or data.

For optimum recording on DVD-R disc, this DVD Video Camera writes control data to the disc in order to automatically make adjustments when it is inserted and ejected accompanying recording. If the disc has no area to be written for adjustment, recording may not be possible. To prevent this, do not insert or eject a DVD-R disc accompanying recording more than 50 times. The DVD Video Camera will not perform "write adjustment" when the DVD Video Camera is turned on again, from off, for recording with the disc in it, or when no recording is made, even if the disc is removed and then reinserted.

●Finalising DVD-R disc

Before using the 8 cm DVD-R disc on a DVD player or DVD video recorder that is compatible with 8 cm DVD-R disc, the disc must be finalised on this DVD Video Camera. For the finalising procedure of 8 cm DVD-R disc, refer to "Finalising DVD-R Disc (Finalize Disc)" (P. 123).

Note:

- When using an unformatted DVD-R disc, it is necessary to format it on this DVD Video Camera (See page 45).
- Do not insert a DVD-R disc recorded on this DVD Video Camera but not finalised, into a recordable device, such as a DVD video recorder: The recorded data may be damaged.
- DVD-R discs edited and finalised on PC or those finalised on another DVD video recorder may not be playable on this DVD Video Camera, depending on the editing software used or recorded status of DVD-R disc.
- Refer to the remaining time indicated on the LCD of DVD Video Camera to check a capacity of a DVD-R disc.

Examples of Discs that cannot be used on this DVD Video Camera:

- | | | |
|---|-------------|--|
| • DVD-RAM (2.6 GB) Ver. 1.0 | • DVD-ROM | • MO |
| • DVD-R (3.9 GB) Ver. 1.0 | • DVD-Video | • MD |
| • DVD-R (4.7 GB) for Authoring Ver. 2.0 | • CD-R | • iD |
| • DVD-RW | • CD-RW | • Floppy disk |
| • DVD+RW | • CD | • Discs other than those with diameter of 8 cm |
| • DVD+R | • LD | • CD-ROM |

Note:

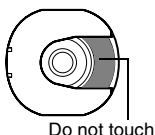
Discs recorded on PC or DVD video recorder may not be playable on this DVD Video Camera: If so, message "This disc cannot be used." will appear. Also, blue thumbnails will appear (Fig. 1* on page 28), or normal playback will not be possible.

Handling Discs

● Using discs

DVD-RAM and DVD-R discs are very delicate recording media. Carefully read the following cautions and observe them:

- When using disc on this DVD Video Camera, be sure to keep it in Round DVD Holder.
- Always use a brand new disc when recording important material.
- Be sure not to touch the disc exposed portion, and be careful that no dirt adheres to it.

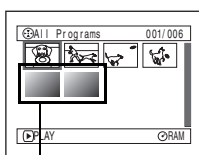


- If there is dust, scratch, dirt on disc or if it is warped, the following phenomena may occur:

- Block noise in playback image
- Momentary stop of playback image
- Sound interrupted during playback, or abnormal sound



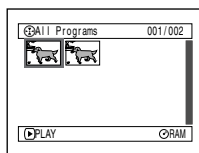
- Blue thumbnail display* (Fig. 1)
- Disc cannot correctly be recognised
- Delay between video and audio



(Fig. 1)

Even if disc is normal, the above phenomena may occasionally occur. While the ACCESS/PC indicator is lit, do not subject disc to vibrations or impact, and avoid using DVD Video Camera at extremely high or low temperatures, or in environment where condensation is likely to occur.

- When recording images, the DVD Video Camera may avoid the portions of disc where recording is not possible, due to dust, scratches, etc. [It will pause ●II at such a portion and automatically restart recording (●REC).] This will cause recording to be interrupted for several seconds to several minutes, and multiple thumbnails will be created by one recording session as shown above. In this case, the recordable time on disc will decrease.
- Be careful when removing the disc since the metal of removal slot of DVD Video Camera, and disc itself, may be hot.



(Recording one scene may produce multiple thumbnails.)

● Storing discs

- When storing disc, insert it in Round DVD Holder into plastic case.
- Be careful that no condensation occurs on disc.
- Do not place disc in following places:
 - Direct sunlight for a long time
 - Where humidity is high or in dusty place
 - While there is heat from a heater, etc.

Note:

- See page 70 when cleaning the removed disc.
- See page 70 for how to handle disc removed from Round DVD Holder.
- See page 70 for how to set the disc removed from Round DVD Holder or another disc correctly in Round DVD Holder.

Removing and Replacing from/in Round DVD Holder

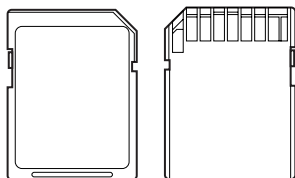
You can remove DVD-RAM or DVD-R disc used on this DVD Video Camera from Round DVD Holder and use the uncovered disc on DVD player, DVD-RAM recorder, drive for PC, etc., which conforms to 8 cm DVD-RAM or 8 cm DVD-R. Removing disc from Round DVD Holder may vary with the disc maker: See the disc instruction sheet. The following explains the disc in Round DVD Holder made by Panasonic.

It is recommended that you do not remove the disc from Round DVD Holder until camera recording is finished, in order to avoid getting dirt on disc.

Note:

Using discs removed from holders on various devices may not always be possible.

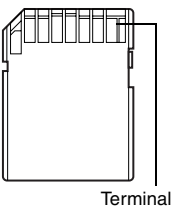
Available Cards



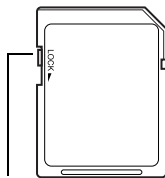
SD Memory Card and MultiMediaCard can be used on this DVD Video Camera.

● Handling card

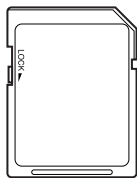
- Do not use cards other than the designated ones.
- Be sure to use a brand new card when recording vital images.
- Do not touch the card terminal or allow it to touch metal.
- Do not paste anything other than exclusive label on label pasting portion.
- Do not subject card to impact, bend or drop it.
- Do not disassemble card or modify it.
- Do not expose card to water.
- Do not use or store card in the following places:
 - Where the temperature is high, such as in vehicle at high temperatures, under burning sun or near a heater.
 - Where humidity is high, or in dusty place
- Keep the memory card out of reach of children to prevent swallowing.
- When the write-protect switch on SD Memory Card is locked, no recording, deletion or editing will be possible on the card.



Terminal



Write-protect switch



Locked status

● Common cautions for disc and card

- It is recommended that you create a backup file for valuable data on hard disk of PC.
- Do not do the following, or the data on card may be damaged or lost:
 - Do not remove the card or turn DVD Video Camera off during reading or writing of data
 - Do not use DVD Video Camera in a place subject to static electricity or electrical noise

Note:

- The reading/writing speed of MultiMediaCard is slower than SD Memory Card. When MultiMediaCard are used, the performance of certain features may be slightly slower than advertised.
- We recommend that you use a Panasonic branded SD Memory Card.
- This DVD Video Camera can play back image data recorded on other digital cameras conforming to the DCF (Design rule for Camera File system) standard. The range of image data playable on this DVD Video Camera is that with pixels from 80 horizontal × 60 vertical to 4000 horizontal × 3000 vertical.
- This camera is based on the DCF standards (Design rule for Camera File system) which were established by the Japan Electronics and Information Technology Industries Association (JEITA). DCF is an integrated image file format of digital cameras: Image files can be used on all digital devices conforming to DCF.
- Image data edited on PC and certain types of image data may not be visible on this DVD Video Camera.
- The image data recorded on another device may not be playable on this DVD Video Camera.

Storage Capacity on Disc or Card

Recordable Time of Movie (Video)

The recordable time will vary depending on the recording quality: See page 81 for the setting of recording quality.

Movie recordable time on one disc (on single side) (when recording only movies)

Recording quality	Disc used	
	DVD-RAM	DVD-R
XTRA	Approx. 18 min ^{*1}	No recording possible
FINE	Approx. 30 min ^{*2}	Approx. 30 min ^{*2}
STD	Approx. 60 min ^{*3}	Approx. 60 min ^{*3}

↑ Image quality prioritized

↓ Recording time prioritized

^{*1}: Variable bit recording (recording of more than 18 minutes may be possible because the transfer rate varies automatically between approx. 3-10 Mbps)

^{*2}: Transfer rate: Approx. 6 Mbps

^{*3}: Transfer rate: Approx. 3 Mbps

Note:

- Audio in XTRA, FINE or STD mode is recorded in the MPEG1 Audio Layer 2 format, which is the option standard of DVD video standard.
- No movie can be recorded on SD Memory Card or MultiMediaCard.
- When using DVD-R disc, you cannot switch the movie quality while recording on the disc: The DVD Video Camera will be automatically set to the movie quality first used with the disc for recording.

Recordable Stills (Photos) on Disc

● Number of recordable stills on one side of disc: Up to 999

If the disc still has free space after recording 999 stills on it, movies can also be recorded on it.

● Recordable Stills (Photos) on Card

The number of recordable stills will vary depending on the recording quality: See page 82 for the setting of recording quality.

For VDR-M50GC

Capacity	Recording quality		
	FINE	NORM	ECO
8 MB	Approx. 45	Approx. 95	Approx. 190
16 MB	Approx. 100	Approx. 200	Approx. 400
32 MB	Approx. 220	Approx. 440	Approx. 880
64 MB	Approx. 440	Approx. 880	Approx. 1,760
128 MB	Approx. 880	Approx. 1,760	Approx. 3,520
256 MB	Approx. 1,760	Approx. 3,520	Approx. 7,040
512 MB	Approx. 3,520	Approx. 7,040	Approx. 14,080

For VDR-M70GC

Capacity	Recording quality		
	FINE	NORM	ECO
8 MB	Approx. 8	Approx. 14	Approx. 20
16 MB	Approx. 22	Approx. 35	Approx. 50
32 MB	Approx. 50	Approx. 80	Approx. 110
64 MB	Approx. 100	Approx. 160	Approx. 220
128 MB	Approx. 200	Approx. 320	Approx. 440
256 MB	Approx. 400	Approx. 640	Approx. 880
512 MB	Approx. 800	Approx. 1,280	Approx. 1,760

(The numbers of recordable stills above are only for reference)

Note:

- Cards used on other devices can be used on this DVD Video Camera.
- No movie or music data recorded on card can be checked, viewed or heard on this DVD Video Camera. In addition, no such a data file can be displayed on this DVD Video Camera.
- Use the remaining display function to check the remaining free space on disc before use. See "Verifying Remaining Free Space on Disc or Card (Capacity)" on page 120.
- Some still data recorded on this DVD Video Camera may not be playable on another device.

● Size and Quality of Photos

The pixel size of JPEG stills that can be recorded on this DVD Video Camera is as follows:

Model	Setting	
	Camera input	External input
VDR-M50GC	640 × 480 pixels	640 × 480 pixels
VDR-M70GC	1,280 × 960 pixels	640 × 480 pixels

The following table shows the file size and quality of one JPEG still recorded on card:

Quality	File size		Application
	VDR-M50GC	VDR-M70GC	
FINE	Approx. 128 KB	Approx. 512 KB	When image quality is prioritized
NORM	Approx. 64 KB	Approx. 384 KB	Standard
ECO	Approx. 32 KB	Approx. 256 KB	When number of stills is prioritized (quality will be slightly inferior)

Although still images are recorded on DVD-RAM disc only in the FINE mode, the quality mode can be chosen when recording stills on card.

* See page 161 for the number of recordable stills.

Note:

- No still can be recorded on DVD-R disc.

Setups

This section explains preparations for recording - setting up the DVD Video Camera and battery.

Setting Up the DVD Video Camera

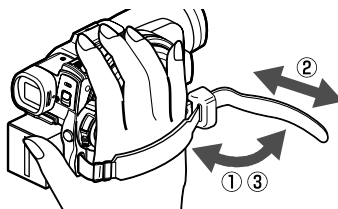
Holding DVD Video Camera

To use as a Grip Belt

Insert your right hand from the bottom of DVD Video Camera up to the base of your thumb.

Put your hand in a position where you can easily operate the REC button and the Zoom lever. Adjust the length of hand strap so that the DVD Video Camera is stable when you press the REC button with your thumb.

- 1) Detach the belt.
- 2) Adjust the length of grip belt.
- 3) Attach the belt.



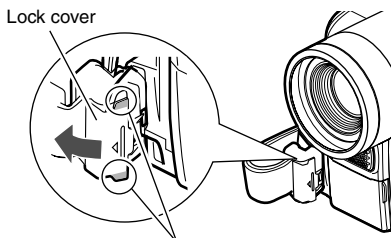
Note:

Do not adjust the hand strap while holding the DVD Video Camera: Doing this could cause the DVD Video Camera to fall and be damaged.

To use as a Hand Strap

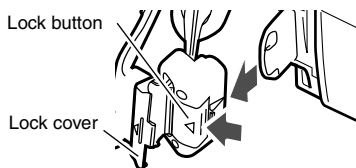
Using the Grip Belt as the hand strap makes it easier to carry the DVD Video Camera.

- 1 Detach the Grip Belt from the Video Camera.
 - 1) Open the Lock cover.



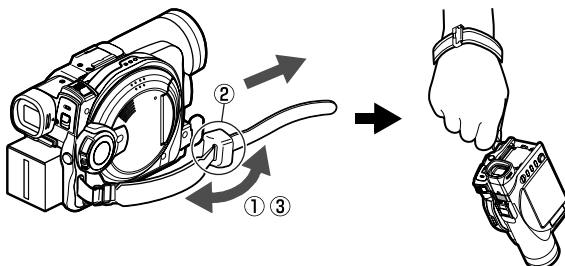
Open the lock cover while pinching the protection portion of both ends.

- 2) Push the Lock button and pull the grip belt from the DVD Video Camera. Support the DVD Video Camera securely by the hand to avoid falling.



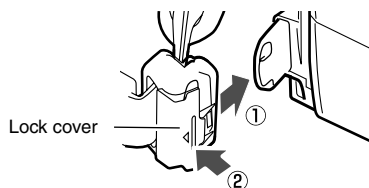
Return the lock cover after pulling out the grip belt.

- 2 Make it a hand strap.
 - 1) Turn over the belt.
 - 2) Pull the tip in the direction of the arrow.
 - 3) Attach the belt.

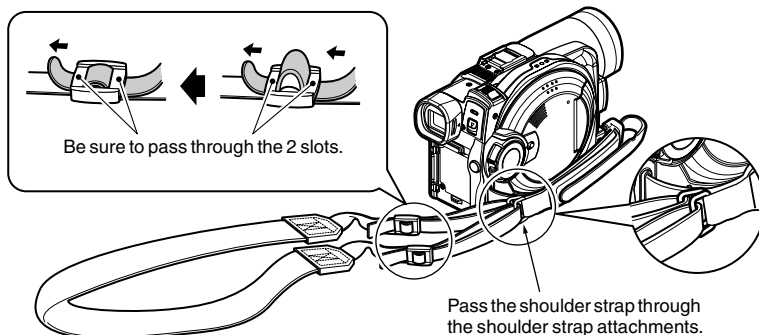


To use as a Grip Belt again

- 1 Attach the tip of the grip belt to the DVD Video Camera (1).
Press down the lock cover in the direction of the arrow so that the belt may not fall out (2).



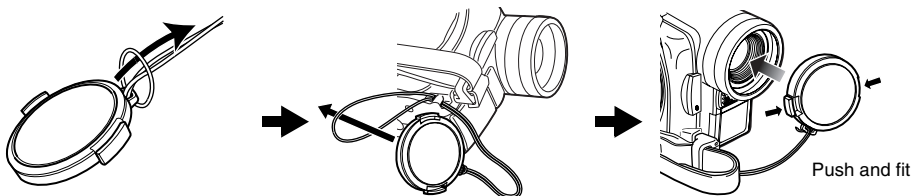
Attaching Shoulder Strap



Attaching Lens Cap

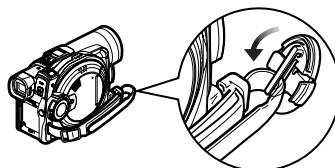
Pass the provided string through the hole in the Grip Belt Attachment part and pass it through the hole in the lens cap.

- 1 Attach the lens cap string to lens cap.
Shorter side is for the lens cap.
- 2 Attach the string to the attachment hole of DVD Video Camera.
Detaching the grip belt makes things easier.
- 3 Push the both sides of cap inward and attach it over the lens.



Note:

- Always keep the lens cap on when not using the DVD Video Camera, to protect the lens.
- When recording, attach the lens cap to the grip belt by hooking the tab inside the cap onto strap for comfortable shooting.
When using as a hand strap, you cannot attach the lens cap to it.



Inserting Battery into Remote Control

Insert the provided lithium battery into remote control.

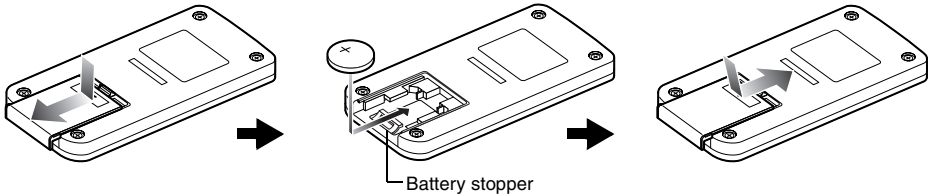
1 Slide the cover to remove it.

2 Insert the lithium battery with the positive ⊕ terminal facing up.

3 Slide the cover to close it.

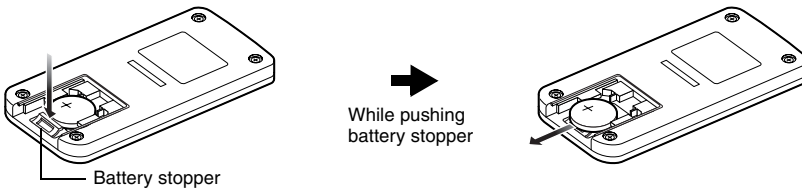
Note:

The life of lithium battery is approximately one year. If the battery is discharged, no operation is possible with remote control: Replace the battery.



Removing Battery from Remote Control

1 While pushing the battery stopper, slide the battery out.



Warning:

- KEEP THE BATTERY AWAY FROM CHILDREN AND PETS.
- IF SWALLOWED CONSULT A PHYSICIAN IMMEDIATELY FOR EMERGENCY TREATMENT.
- BATTERY MAY EXPLODE IF NOT HANDLED PROPERLY. DO NOT RECHARGE, DISASSEMBLE OR DISPOSE OF IN FIRE.

Note:

- Replace the battery with a Panasonic CR2025. Use of another battery may present a risk of fire or explosion.
- Dispose of battery safely in accordance with local laws. Do not dispose of in fire.
- Do not short circuit the battery.
- Do not hold the battery with the metallic tweezers.
- Keep the battery in a dark, cool, dry place.

CAUTION

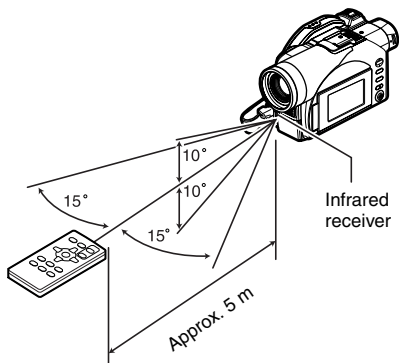
Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the equipment manufacturer. Discard used batteries according to manufacturer's instructions.

WARNING

Risk of fire, explosion and burns. Do not recharge, disassemble, heat above 100°C or incinerate. Keep the Button-Type battery out of the reach of children. Never put Button-Type battery in mouth. If swallowed call your doctor.

●Using Remote Control

To operate the DVD Video Camera with the remote control, point it to the infrared receiver before pressing buttons. If it does not work properly, do not forget the pointing to repeat the action. The remote controllable distance is up to 5 m.



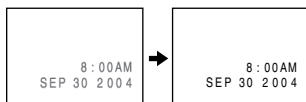
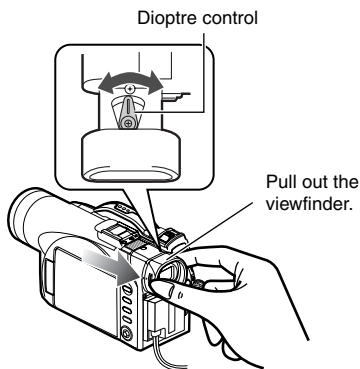
Note:

When using the remote control, make sure that the infrared receiver on DVD Video Camera is not exposed to direct sunlight or any intense light. If the infrared receiver is subject to light stronger than the infrared light from remote control, the DVD Video Camera cannot be operated by remote control.

- If there is an obstacle between the remote control and infrared receiver on DVD Video Camera, remote control may not be possible.
- Depending on the type of fluorescent lamp, the remote controller may not work properly.

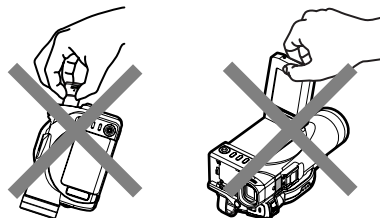
Viewing Subject through Viewfinder

- 1 Pull out the viewfinder.
- 2 Turn the dioptre control knob to adjust the focus to suit your eyesight.



Caution:

Do not lift the DVD Video Camera by holding the viewfinder or LCD monitor: If the viewfinder or LCD monitor comes off, the DVD Video Camera will fall.



Note:

- If no image appears in viewfinder, refer to "Check 6" on page 144.
- If the LCD monitor is open approximately 90°, the viewfinder will be off.
- Focusing will not be correct unless the viewfinder is pulled out.

Viewing Image on LCD Monitor Screen

If you open the LCD monitor, you can monitor subject image on the LCD screen.

1 Open the LCD monitor.

The LCD monitor has a portion where you can hook your finger. Hook the finger there to open the monitor.

● Range where the LCD monitor can be moved

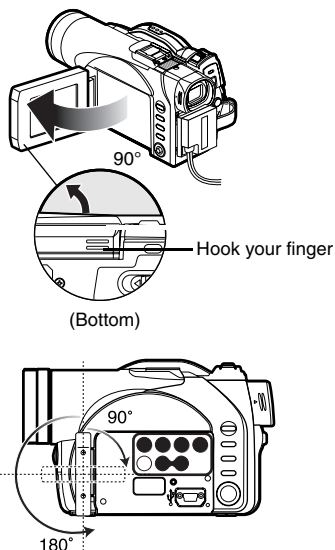
The LCD monitor can be opened up to approximately 90°.

If the LCD monitor is open 90°, it can be tilted with the screen down as much as 90°, and can also be tilted with screen up and turned up to 180° so the screen faces in the same direction as the lens.

If the LCD monitor is turned 180° so the screen faces in the same direction as the lens during recording, subject image will also appear in the viewfinder as an mirror image (left/right reversed). Tilt the LCD monitor to adjust its vertical angle so that you can see the screen easily.

Note:

- If no image appears on LCD monitor screen, refer to "Check 7" on page 144.
- Be sure to open the LCD monitor approximately 90° before changing its vertical angle.
- Do not record for a prolonged time with the LCD monitor turned approximately 180° in close contact with the DVD Video Camera body: Doing this could cause the DVD Video Camera and LCD monitor to become hot.



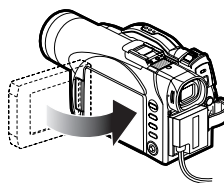
Closing LCD Monitor

Before closing the LCD monitor, be sure to reset it at right angles to the DVD Video Camera.

Replace the LCD monitor on the DVD Video Camera with the LCD screen facing inward until a click is heard.

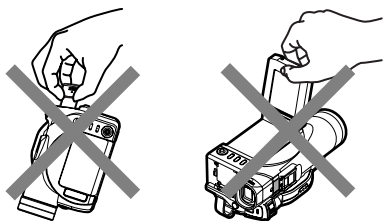
Note:

- Be sure to return the LCD monitor at right angles to the DVD Video Camera before closing it or replacing it on the DVD Video Camera with its screen facing outside. If the LCD monitor is tilted, it cannot be closed to the DVD Video Camera.
- If the LCD monitor is not securely locked to the DVD Video Camera, no image will appear in the viewfinder.



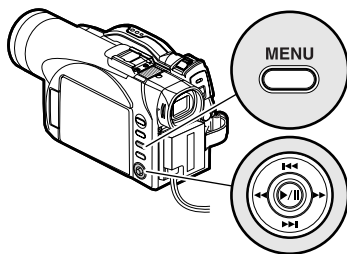
Caution:

Do not lift the DVD Video Camera by holding the viewfinder or LCD monitor: If the viewfinder or LCD monitor comes off, the DVD Video Camera will fall.



Setting Date and Time

Set the current date and time so that the date and time you make a recording can be recorded correctly. The following procedure can also be used to correct the date and time you have already set.

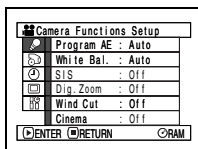


Tilt up/down and to left/right to select, and then press ►/|| to designate.

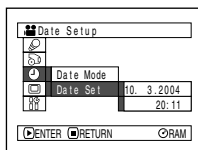
1 Turn the DVD Video Camera on.

2 Press the MENU button.

The menu screen will appear.



3 Use the joystick to choose "Date Setup" and then "Date Set".



4 Tilt the joystick to right.

The figure for the day will be selected.

[The digit that is highlighted first depends on the date display format (set up in Date Mode): The digit on the left end of the date display will be first highlighted.]

Note:

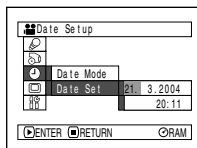
After setting the figure for the day, tilt the joystick to right to select the digit to be set. If you press the ►/|| button after selecting the figure for the day, the screen for verifying the set date will appear instead of screen for setting month, year or time.

5 Tilt the joystick to left or right to select the digit you want to set in sequence.

Tilt the joystick up or down to select the number for current date/time, and then repeat step 5 to set the current date and time.

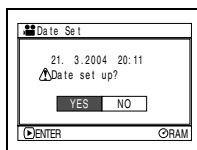
Note:

To stop date/time setting midway, press the ■ button.



6 After setting the current date and time, press the ►/|| button.

The screen for verifying the set date will appear.



7 If the displayed date and time are correct, use the joystick to choose "YES", and then press the ►/|| button.

The date and time will be set, and the DVD Video Camera will enter the recording pause status. Choosing "NO" will restore the menu screen.

Note:

This DVD Video Camera incorporates a rechargeable battery to store the date and time in memory. If this built-in battery is exhausted, the date and time will be reset. To prevent this, connect the AC adaptor/charger to DVD Video Camera every 3 months, and leave them for at least 24 hours with the DVD Video Camera turned off: The built-in battery will be charged.

Changing Display Format of Date and Time

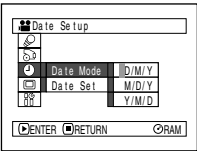
You can select one of three date display formats: day/month/year or month/day/year, year/month/day. Associated with the selected date display, the time display format will also change as follows:


Display format	Example of display
D/M/Y	17:00 30. 9.2004
M/D/Y	5:00PM SEP 30 2004
Y/M/D	17:00 2004. 9.30

1 Press the MENU button.

The menu screen will appear.

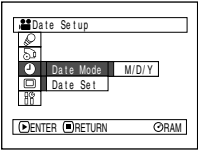
2 Use the joystick to choose “Date Mode” on the “Date Setup” menu screen, and then press the ►/II button.



The options will appear on the right of “Date Mode”: The  mark will be attached to the currently selected option.

3 Use the joystick to select the desired date display format, and then press the ►/II button.

The menu screen for setting date will be restored, and the “Date Mode” has been changed as you designated.



4 Press the MENU button to switch off the menu screen.

Note:
If the date display format has been changed, the display format during playback as well as during recording will also be changed (See page 61).

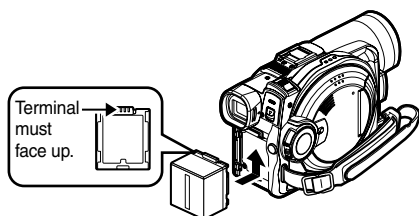
About the Battery Pack

Attaching Battery to DVD Video Camera

- 1 Fit the battery to the battery attachment platform on this DVD Video Camera and slide it upward until a click is heard.

Note:

- Make sure that the battery is in the correct orientation.
- Make sure that the battery is securely attached: Incomplete attachment could cause the battery to fall, resulting in damage.



Removing Battery

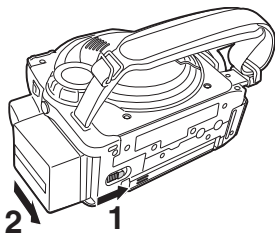
After using the DVD Video Camera, remove the battery from it.

- 1 Slide the BATTERY EJECT switch on the bottom of DVD Video Camera: The battery can be removed.

Note:

- For safety, be sure to turn the DVD Video Camera off before attaching or removing the battery.
- Be careful not to drop the removed battery.
- If the battery remains attached, minute level current will flow even if the DVD Video Camera is off, and the battery will discharge.

- 2 Slide the battery pack downward to remove it.



● Recordable time with fully charged battery (with no zoom operation, etc.)

The reference for DVD Video Camera recordable time with fully charged battery pack [with model CGA-DU14]:

VDR-M50GC

Video quality mode		DVD-RAM disc	DVD-R disc
XTRA ^{*1}	When using viewfinder	approx. 140 min	—
	When using LCD monitor	approx. 120 min	—
FINE	When using viewfinder	approx. 140 min	approx. 135 min
	When using LCD monitor	approx. 120 min	approx. 115 min
STD	When using viewfinder	approx. 165 min	approx. 160 min
	When using LCD monitor	approx. 135 min	approx. 130 min

VDR-M70GC

Video quality mode		DVD-RAM disc	DVD-R disc
XTRA ^{*1}	When using viewfinder	approx. 130 min	—
	When using LCD monitor	approx. 110 min	—
FINE	When using viewfinder	approx. 130 min	approx. 125 min
	When using LCD monitor	approx. 110 min	approx. 105 min
STD	When using viewfinder	approx. 150 min	approx. 145 min
	When using LCD monitor	approx. 125 min	approx. 120 min

(approx.)

^{*1} The time in XTRA mode is only for reference: It varies depending on recording contents.

Without any extraordinary operation, such as zooming:

The continuously recordable time of DVD Video Camera in the left table shows the time available when the DVD Video Camera is in the recording mode without using any other function after recording is started. In actual recording, the battery will discharge 2-3 times faster than this reference, since the REC button and zoom are being operated, and playback is performed. Assume that the recordable time with a fully charged battery is between 40 and 60 minutes, and prepare the number of batteries to allow for the time you are planning to record on the DVD Video Camera. Note that the battery discharges faster in cold places.

● The time taken for charging the battery pack is as follows at 25°C

CGA-DU14
165 min

Note:

- See page 153 when charging is not possible.
- The charge time will vary depending on the battery remaining level.
- During and after charging, the battery will be warm, but this does not indicate a fault.
- If the following phenomena appear, the battery may be dead: Replace it.
 - Charging does not start within 10 seconds (the CHARGE indicator does not light).
 - The battery cannot be charged up to 75% if more than 9 hours has elapsed after charging started.
 - The battery cannot be fully charged if more than 5 hours has elapsed after it was charged to 75%.
- Charge the battery at ambient temperature 10°C to 30°C: Charging at temperatures other than this range could damage the battery.

Battery Remaining Level Indicator

When the battery is used to power the DVD Video Camera, the battery remaining level appears in the viewfinder or on the LCD screen as follows:



Note:

The remaining level indicator " " may be displayed for an extended period, and " " or " " may be displayed for a shorter period.

Efficient Use of Battery

Charge battery immediately before using DVD Video Camera:

The battery will slightly discharge even if it is detached from the DVD Video Camera. If the battery is left attached to DVD Video Camera, it will consume a slight amount of power.

Therefore, it is recommended that you charge the battery shortly before using the DVD Video Camera, usually on the day before you plan to use it.

However, since the battery used for this DVD Video Camera is free from the memory effect, you do not need to completely discharge the battery before charging it.

When not using the DVD Video Camera for an extended period:

It is recommended that you fully charge the battery once a year, attach it to DVD Video Camera and use it up; then remove the battery and store it in a cool place again.

Store in cool, dark place:

When you are not using the DVD Video Camera, remove the battery and store it in a cool, dark place. If you store it in a place where the temperature is high, the battery life will be shortened. Be especially sure not to store the battery in an environment (in a closed vehicle) over 60°C: Neglecting this could damage the battery.

Battery life:

The battery life varies greatly depending on the ambient environment and how often the DVD Video Camera is used. If the usable time of DVD Video Camera with a fully charged battery is noticeably short, the battery is probably dead: Purchase a new one.

Power save and discharge of battery:

It is recommended that you turn the DVD Video Camera off in status other than recording, since even during recording pause battery power is consumed at the same level as during recording. If, when you specify Power Save On, the recording pause status continues for approximately 5 minutes, the DVD Video Camera will automatically turn off.

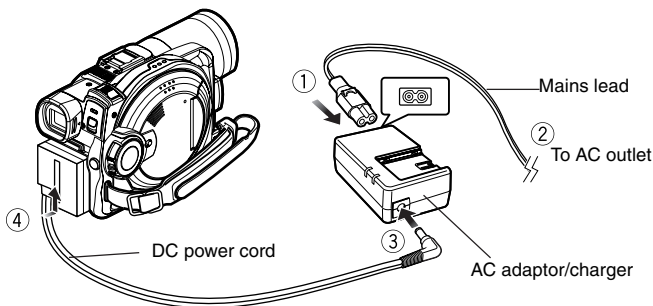
To set or release power save, see "Turning DVD Video Camera Off Automatically (Power Save)" on page 87.

Using DVD Video Camera with AC adaptor/charger

It is recommended that you use the AC adaptor/charger to power the DVD Video Camera from household AC outlet when you perform settings on it, play back or edit images, or use it indoors.

Note:

Be sure to use the specified AC adaptor/charger (VSK0631) to power the DVD Video Camera. Using other AC adaptor/chargers could cause electric shock or result in fire.



1 Connect the mains lead to AC adaptor/charger.

2 Plug the mains lead into AC outlet.

3 Plug one end of DC power cord into the DC output jack on AC adaptor/charger.

4 Attach the other end of DC power cord to the battery attachment platform on DVD Video Camera.

Note:

- The mains lead's outlet plug does not fit entirely into the AC adaptor/charger socket.
- The AC adaptor/charger can be used around the world. An AC plug adaptor is required in some foreign countries. If you need one purchase it from your distributor.
- If the CHARGE indicator does not light when the AC adaptor/charger is plugged into AC outlet, unplug it from the AC outlet, wait a few moments, and then plug it into the AC outlet again. If the CHARGE indicator still does not light, the AC adaptor/charger may be faulty. Unplug it from the AC outlet and consult your dealer.

Inserting and Removing Disc

Inserting Disc

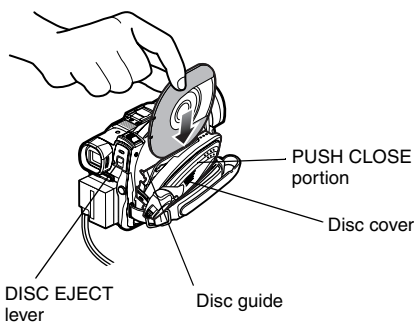
- 1 Press down the DISC EJECT button once and release it.

A few moments after the ACCESS/PC indicator blinks, the cover of disc insertion block will open slightly.

- 2 Gently open the cover by hand until it stops.

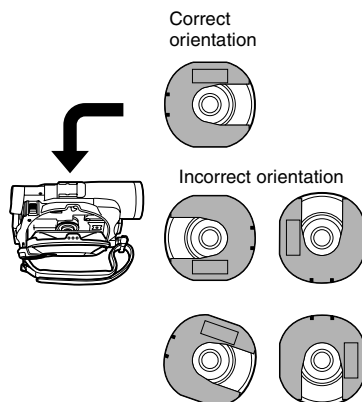
- 3 Insert the disc, in Round DVD Holder, into the disc guide until it stops.

Note that the recording/playback surface of disc must face the inside of DVD Video Camera. The orientation for inserting the disc into the disc guide is also predetermined: Load the disc correctly, referring to the figure below.





- The disc exposed portion must face in the same direction as the lens, as shown in figure.
- The recording/playback side must face the inside (DVD Video Camera).

If the disc is not correctly inserted, the cover will not close. Never try to forcibly close the cover: This could cause damage. Reinsert the disc properly.



- 4 Push the section marked "PUSH CLOSE" on the cover of disc insertion block, to close the cover.

- 5 Turn the DVD Video Camera on ( or ).

When "DISC ACCESS" disappears, the DVD Video Camera is ready for recording.

● Identifying recording/playback sides of disc:

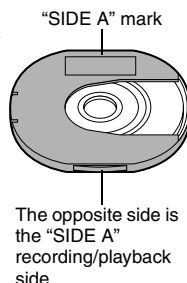
Single sided disc:

The recording/playback side is opposite to the printed label.

Double-sided disc:

The recording/playback side of "SIDE A" is opposite to the "SIDE A" marked side.

The recording/playback side of "SIDE B" is the "SIDE A" marked side.



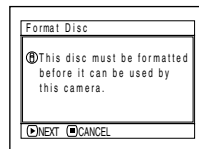
Note:

- Disc cannot be inserted or removed unless the battery or AC adaptor/charger is connected to DVD Video Camera.
- See page 70 for how to set disc in Round DVD Holder.
- If there is some delay before recording starts, refer to page 143.
- The disc insertion orientation is predetermined: Forcibly inserting a disc in wrong orientation could damage the DVD Video Camera or Round DVD Holder of disc.
- If the disc is not correctly inserted, the cover will not close. Never try to forcibly close the cover: This could cause damage. Reinsert the disc properly.
- If a single-sided disc is inserted into DVD Video Camera with the printed label facing the inside, an error message will appear. Remove the disc and reinsert it with its recording/playback side facing the inside. See "Trouble Messages" on page 145.
- **When using double-sided disc**
Recording is possible on both sides of double-sided disc. However, when recording or playback on one side is finished, recording or playback will not move automatically to the other side. Remove the disc once from the DVD Video Camera, turn over the disc in Round DVD Holder and insert it again for continued use.

● When using brand-new DVD-R disc

Recognition of the disc will start.

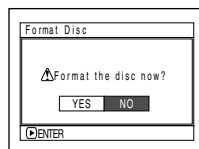
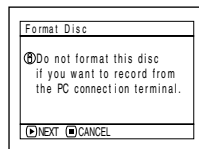
The messages on the right will appear in sequence by pressing the ►/II button between messages.

**When recording on this DVD Video Camera:**

When first message "Format the disc now?" appears, choose "YES" and then press the ►/II button. The disc will be automatically formatted.

When formatting is complete, "DVD-R disc, Video mode cannot be changed" will appear (See page 149): Press the ►/II button to erase the message.

Once formatted, a DVD-R disc can no longer be changed to a disc for PC, even if it has not been recorded on this DVD Video Camera.

**Note:**

See page 81 for movie quality mode.

When recording data from PC:

While the above messages are being displayed, press the ■ button, or when message "Format the disc now?" appears, choose "NO" and then press the ►/II button.

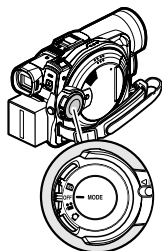
However, if data from PC has not yet been recorded, the disc can be made usable on this DVD Video Camera. When inserting the disc into this DVD Video Camera, the same message will appear: If you wish to use it on this DVD Video Camera, choose "YES".

Note:

Do not initialise a disc on which you wish to record data created using the application (MyDVD) of PC.

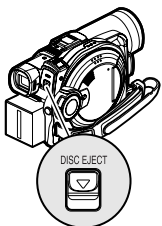
Removing Disc

- 1 Set the power switch to "OFF" to turn the DVD Video Camera off.



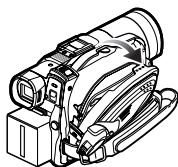
- 2 Press down the DISC EJECT lever once and release it.

In a moment, the cover of disc insertion block will open slightly.



- 3 Gently open the cover until it stops.

When the cover is fully open, the disc will slightly come out from the disc guide, and stop.

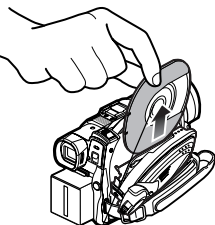


- 4 Remove the disc.

Hold the top of Round DVD Holder as shown in the illustration and gently pull it out.

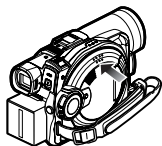
Note:

Be careful not to touch the disc exposed portion when removing the disc.



When grasping the holder, avoid the disc exposed portion.

- 5 Gently push the section indicated "PUSH CLOSE" on the cover of disc insertion block, to close the cover.



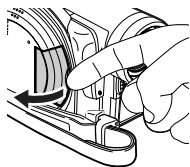
Note:

- Even after the DVD Video Camera is turned on, the disc can be removed unless it is in recording status. Hold down the DISC EJECT button for approximately 2 seconds, and then release it to remove the disc (The DISC EJECT indicator on the LCD screen will blink.). It is recommended that you turn the DVD Video Camera off before inserting or removing disc to prevent misoperation.
- Do not remove the battery pack or disconnect the AC adaptor/charger during removal of the disc or until power is completely turned off: If you do, the disc cover will not open. If this happens, reattach the battery pack or AC adaptor/charger, push down the DISC EJECT lever once, and then release it.
- Do not insert anything other than the 8 cm DVD-RAM or DVD-R disc into the disc insertion block: Doing so could cause malfunctions.
- Set the power switch to "OFF" to turn the DVD Video Camera off.
- When inserting or removing the disc, be careful not to touch the inside of DVD Video Camera [especially, the lens of laser pickup (see "Terminology" on page 165)].
- When inserting or removing the disc, connect a charged battery or AC adaptor/charger to the DVD Video Camera: The disc cover will not open unless the DVD Video Camera is powered.

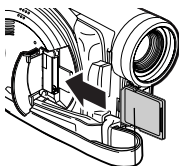
Inserting and Removing Card

1 Turn the DVD Video Camera off.

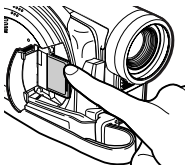
2 Open the cover of card insertion block.



3 Insert card with its terminal inward until it locks.

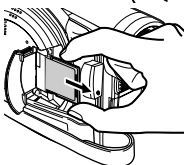
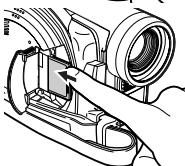


Label pasting portion

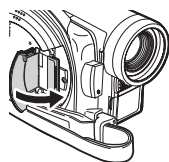


Removing Card

Push the centre of card edge: The card will come out so that it can be held by fingers.

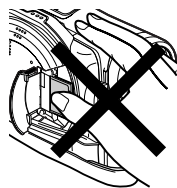


4 Close the cover of card insertion block.



Note:

- Do not push the label pasting portion of SD Memory Card when removing it: Doing so could damage the SD Memory Card.
- When you close the cover, be sure not to insert the grip belt into the insertion block. If you insert the grip belt into the insertion block, the insertion block will be damaged.



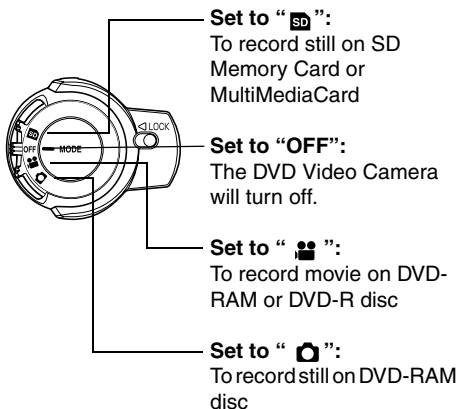
Basic Techniques

This section explains about recording of movies and still images, and also basic settings on DVD Video Camera.



Basic Handling of DVD Video Camera

Turning DVD Video Camera On and Off

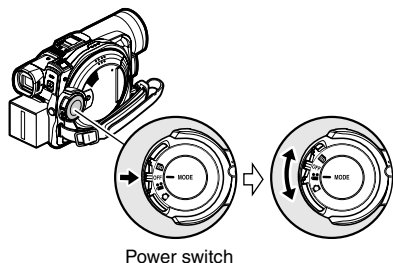
While holding down the blue button at the centre of power switch, set the switch according to each recording function:



Power ON status

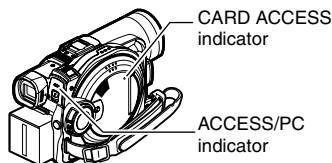
During playback, set the power switch to “” or “” when using disc, or set it to “SD” when using card.

Turn the switch while holding down the blue button at the centre of switch.



Note:

- Once you turn the DVD Video Camera on to let it recognise the disc, you can immediately record or play back by turning the DVD Video Camera on again. However, if you remove the disc, replace it, or if the date changes after power is turned on, it will take some time for the DVD Video Camera to start because it must recognise the disc again (See page 143).
- Once you have turned the DVD Video Camera on to record, you can immediately start recording when turning the DVD Video Camera on next time (DVD-R disc).
- It will take some time for the DVD Video Camera to display the Disc Navigation screen after power is turned on.
- If you turn the DVD Video Camera on, the ACCESS indicator will light or blink to show that the DVD Video Camera is recognising the disc or card: During this time, no operation, such as recording, can be performed. After several seconds, the ACCESS indicator will go out, and operating the DVD Video Camera will be possible. If the ACCESS indicator does not go out, refer to “Check 4” on page 143.

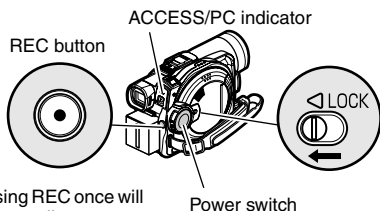


- When the DVD Video Camera is turned on, the self-diagnosis function will work and a message may appear. In this case, refer to “Trouble Messages” on page 145 and take corrective action.
- While the ACCESS/PC or CARD ACCESS indicator is lit or blinking, do not give a strong impact or vibration to the DVD Video Camera.

Recording Movie

Before You Begin

- Insert a recordable DVD-RAM or DVD-R disc into this DVD Video Camera.



Pressing REC once will start recording; pressing it once again will temporarily stop recording.

Power switch

1 Turn the DVD Video Camera on.

Set the power switch to “” to turn the DVD Video Camera on.

After the ACCESS/PC indicator goes out, perform the subsequent operation:

2 Check the subject on the screen (viewfinder or LCD).

If using the viewfinder, pull it out.

3 Press the REC button.

The “●II” mark in the viewfinder or on the LCD screen will change to the “●REC” mark, and recording will start.

During recording, the recording indicator on the front of DVD Video Camera will light.

Pressing REC again during recording will set the DVD Video Camera to the recording pause status.

4 When recording is finished, turn the DVD Video Camera off.

Note:

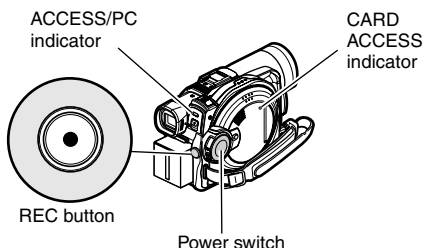
- See “Check 1” on page 143 when recording movie is not possible.
- See “Check 4” on page 143 if it takes some time before recording is possible.
- See “Check 5” on page 144 if the DVD Video Camera does not operate.
- See page 52 for on-screen information display.
- It is recommended that you use DVD-RAM disc from which recorded contents can be deleted.

- Sound is recorded from the stereo microphone on the front of DVD Video Camera: Take care that this microphone is not blocked.
- You can press the REC button immediately after the DVD Video Camera enters the recording pause status, but no further recording can be made while “DISC ACCESS” is being displayed. Recording will restart after the message disappears.
- Do not turn power off while message “DISC ACCESS” is being displayed.
- Take care that power is not interrupted while the ACCESS/PC indicator is blinking.
- The minimum recordable time of movie is approximately 3 seconds.
- See page 88 for setting of Record LED (recording indicator) On/Off.
- For various functions available during recording, see “Setting Up Camera Functions” on page 76.
- Panasonic cannot be responsible for video and audio that cannot be recorded or edited because of any defect.
- The power switch can be changed over even during recording, but the operation will not be changed.
- Each time the DVD Video Camera enters the recording pause status, the counter display will be reset to “0:00:00”.
- When using DVD-R disc, do not perform the following, or data on the disc may not be read:
 - Using another device, doing additional recording on DVD-R disc recorded on this DVD Video Camera
 - Using this DVD Video Camera, doing additional recording on DVD-R disc recorded on another device
- It is recommended that you set the LOCK switch to (to the left) to prevent the power switch in the “” position from accidentally moving to “”.

Recording Stills

Note:

Recording of still images is possible on DVD-RAM disc and card.



1 Turn the DVD Video Camera on.

When using DVD-RAM disc:

Set the power switch to "CAM".

When using card:

Set the power switch to "SD".

After the ACCESS indicator goes out, perform the subsequent operation:

2 Check the subject on the screen (viewfinder or LCD).

3 Press the REC button.

The DVD Video Camera automatically focuses on the subject at the centre of screen (when auto focus is selected).

The screen will be black, and then the recorded still will be displayed. When the "●II" mark appears, you can proceed with the next recording; while "DISC ACCESS" or "CARD ACCESS" is being displayed, you cannot proceed with the next recording.

4 Set the power switch to "OFF" to turn the DVD Video Camera off.

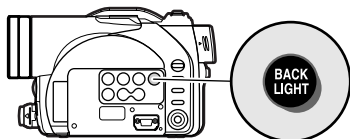
Turn power off only after message "DISC ACCESS" disappears.

Note:

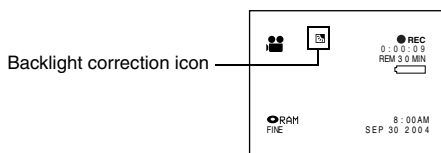
- See "Size and Quality of Photos" on page 31 for details of stills on card.
- See "Check 2" on page 143 if recording photos is not possible.
- Do not operate the power switch or remove the card while the ACCESS/PC or CARD ACCESS indicator is lit or blinking: Doing so may damage the card or the data on card.
- With VDR-M70GC, the range of screen in which recording is possible will be different for movie and still.
- The DVD Video Camera automatically sets the shutter speed between 1/800 and 1/30 second (between 1/800 and 1/10 second if Program AE has been set to Low Light) depending on the subject brightness.

Compensating for Backlight

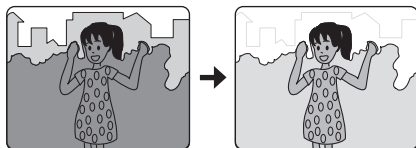
When subject is lighted from rear, this function will compensate for lighting so that the subject is not too dark.



1 Press the BACK LIGHT button during recording.



The backlight correction icon will appear.

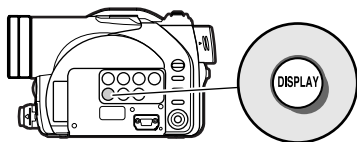


Note:

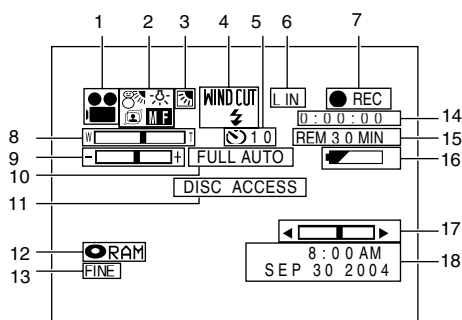
- Pressing the BACK LIGHT button will alternate between backlight setting between on and off.
- The backlight setting will automatically return to "off" when the DVD Video Camera is turned off.

On-Screen Information

Various types of information will appear in the viewfinder or on the LCD screen during recording.



Information Display During Recording



The above screen is an example for explanation: It is different from the actual display.

1. Recording mode

- : Movie
- : Still with disc
- : Still with card
- *1 : External input still with disc (field)
- *1 : External input still with disc (frame)
- *1 : External input still with card (field)
- *1 : External input still with card (frame)

2. Program AE

No display : Auto

- : Sports
- : Portrait
- : Spotlight
- : Surf & Snow
- : Low Light

White balance

No display : Auto

- : Set
- : Outdoor
- : Indoor

Image stabiliser (SIS) (only in movie recording mode)

No display : SIS OFF

- : SIS ON

Manual focus

No display : Autofocus

- : (display in English or German): Manual focus
- : (display in French or Italian): Manual focus
- : (display in Spanish): Manual focus

3. Backlight compensation

No display : Backlight compensation OFF

- : Backlight compensation ON

4. WIND CUT (only in movie recording mode)

No display : Wind Cut OFF

- : Wind Cut ON

External flash*2 [when Video Flash (sold separately) is attached] (only in still recording mode)

A : Emits light automatically (AUTO)

: Always emits light

: No light emission

5. Self-timer (only in still recording mode)

No display : Self-timer OFF

- : Self-timer ON (count is from 10 seconds)

6. External Input

L IN : AV input

7. Recording status

: During recording

: During recording pause

No display*3








8. Zoom

W T
(Digital Zoom: Off)

W T
(Digital Zoom: 40x)

W T
(Digital Zoom: 500x (VDR-M50GC),
240x (VDR-M70GC), only in movie
recording mode)

9. Exposure correction**10. FULL AUTO indicator****11. Warning message****12. Disc/Card type**

-  **RAM** : DVD-RAM
-  **R** : DVD-R
-  **RAM** : DVD-RAM (write-protected)
-  : DVD-R disc already finalised on this DVD Video Camera
-  : DVD-R disc finalised on a device other than this DVD Video Camera
-  : SD Memory Card or MultiMediaCard
-  : Locked SD Memory Card
- No display^{*4}

13. Movie recording quality (only when using disc)

- XTRA** : Highest quality (only when using DVD-RAM disc)
- FINE** : High quality
- STD** : Standard



Still recording quality (only when using card)

- FINE** : High quality
- NORM** : Standard
- ECO** : Number of recordable stills is prioritised

14. Movie recording time (only in movie recording mode)**15. Remaining space on disc/card^{*5}**

- REM XX MIN^{*6}** : Remaining recordable minutes during movie recording
- REM XX^{*7}** : Number of remaining recordable still images during still recording

16. Remaining battery level

-  (full charge)
-  (low remaining charge)

17. Brightness/Colour density of LCD screen**18. Current date/time**

*1 Appears only with external input when the DVD Video Camera is in PHOTO recording mode.

*2 Not displayed on VDR-M50GC.

*3 When no disc or card is in the DVD Video Camera, or disc has not yet been initialised, a write-protected disc or locked card, or a disc or card with no remaining space, has been inserted.

*4 When a disc or card that cannot be used in this DVD Video Camera is inserted

*5 No remaining time or number will be displayed with a protected disc or locked card, or finalised DVD-R disc.

*6 In XTRA mode, possible recording time may be longer than the displayed time.

*7 The displayed number of recordable stills is for reference: The decreasing number may not be correct, depending on recording conditions (not displayed with a DVD-R disc).

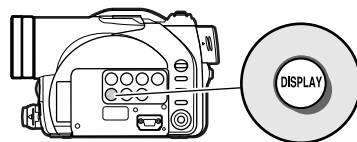
● Switching the information display mode

You can switch the display mode of on-screen information:

Press the DISPLAY button.

The full and minimum display modes will alternate.

- **Full display mode:** All types of information will appear.
- **Minimum display mode:** The recording mode (see 1 on page 52) and recording status (see 7 on page 52) will appear. If the DVD Video Camera has warning information, a warning message will appear.



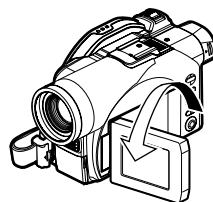
Note:

The DVD Video Camera does not record the date and time as a part of image. However, this information during recording will be recorded with image as data which can be checked on Disc Navigation screen during playback (See "Information Display during Playback" on page 61).

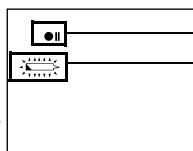
● Display when recording an image of yourself

When recording with the LCD screen facing the same direction as the lens, the operating status will appear, and in addition, the battery remaining level will blink when the battery has almost no remaining charge.

The following operating status indicator will light or blink to give warning message to user. The message can be checked when returning the LCD monitor 180° to the original status from the status in which the LCD screen was facing the same direction as the lens.



- : The disc has almost no free space.
- : Write-protected disc or locked card is loaded.
- : You are attempting to record a still on DVD-R disc.
- No display : Disc or card that cannot be used has been loaded.
- II● : The disc or card is full, or you are attempting to record a copy-guarded image.



Operating status/
warning message
Battery remaining
level

Note:

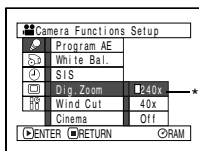
- If the LCD screen is set facing the same direction as the lens, the LCD screen will display a mirror image (left and right reversed).
- If the LCD screen is set facing the same direction as the lens, you can also view subject image in the viewfinder.
- Although you can switch to the manual focus, exposure and on-screen display modes even during recording with LCD screen facing the same direction as lens, they will not appear on the screen.

Zooming

This DVD Video Camera allows you to record using optical 18- (on VDR-M50GC) or 10- (on VDR-M70GC) power zoom and digital zoom.

If you continue to hold the zoom lever on the "T" control side with Dig. Zoom 40x or 240x specified, the digital zoom will be activated midway (when optical 18-power is exceeded on VDR-M50GC or optical 10-power is exceeded on VDR-M70GC). You can set the digital zoom up to 40x in photo mode, and 40x and 500x (on VDR-M50GC) or 240x (on VDR-M70GC).

- 1 Press the MENU button, choose "Dig. Zoom" on the "Camera Functions Setup" menu screen, and then press the ►/II button.

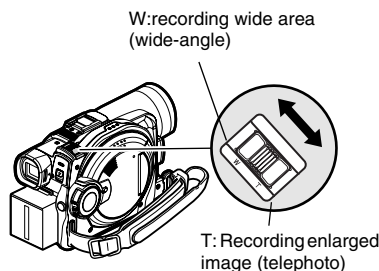
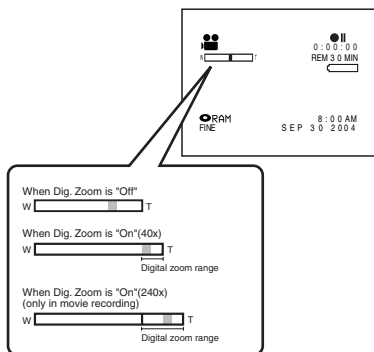


- 2 Choose the desired magnification, and then press the ►/II button.

- 3 Press the MENU button to end the setting.

Moving the zoom lever will display the digital zoom bar.

* 500x will appear on VDR-M50GC; 240x will appear on VDR-M70GC.



Note:

- Dig. Zoom setting will be stored in memory even if the DVD Video Camera is turned off.
- You can also use the DIGITAL ZOOM button on remote control to switch the digital zoom setting: Pressing the button during movie recording will switch the setting between "Off", "40x" and "500x" (on VDR-M50GC) or "240x" (on VDR-M70GC): Pressing the button during still recording will switch between "Off" and "40x".
- If you set zoom to 500x (VDR-M50GC), 240x (VDR-M70GC) when recording still, the digital zoom will be up to 40x.
- When a subject is zoomed, it may be momentarily out of focus.
- When digital zoom is engaged, the image quality will be rougher.
- When using card, zooming only up to 40x is possible, even when "500x" (on VDR-M50GC) or "240x" (on VDR-M70GC) or "40x" has been chosen.
- If the power switch is set to " " with DVD-RAM disc loaded, zooming only up to 40x is possible, even when "500x" (on VDR-M50GC) or "240x" (on VDR-M70GC) has been chosen.
- When you record pictures, with 10x or more of magnification, the DVD Video Camera is susceptible to shake. We recommend using a tripod (only for VDR-M50GC).

Macro Recording

Use the macro function when recording a small object from close-up position: You can shoot the subject as close as approximately 2 cm from the lens surface, magnifying the image to fill the screen.

- 1 Aim the DVD Video Camera at the subject, and press the zoom lever to "W" control side.

Note:

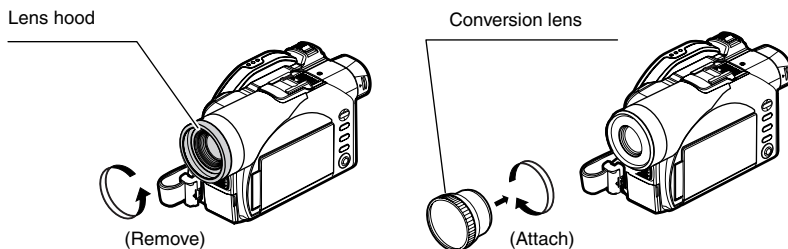
- Zoom can be used, but the subject may not be focused, depending on the distance to the subject. In this case, move the zoom to "W" control side to focus.
- The amount of light tends to be insufficient during macro recording: If the subject image is too dark, use additional lighting.

Recording Subjects for Stronger Wide-Angle or Telephoto Effect

Use tele-conversion lens or wide-conversion lens to record subjects for stronger telephoto or wide-angle effect. Use conversion lenses with the following filter diameter.

VDR-M50GC/VDR-M70GC : 37 mm

Remove the lens hood on the top surface of lens, and then attach the conversion lens over the lens.



Note:

- Be careful not to lose the removed lens hood.
- The four corners of screen may be dim depending on the conversion lens used.

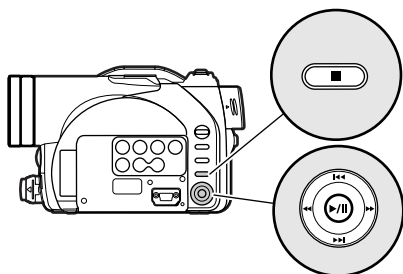
Playing Back

Before You Begin

- Insert a disc or card recorded on this DVD Video Camera (P. 44, 47).
- Turn the DVD Video Camera on (P. 48).

RAM R CARD

Playing Back



1 Press ►/|| button in the recording pause status.

The DVD Video Camera will enter the playback mode, and the scene you have recorded last will be played back.

When playback is finished, the DVD Video Camera will enter the pause status at the last image on disc.

If the playback pause status continues for as long as 5 minutes, the DVD Video Camera will automatically return to the recording pause status.

2 Press the ■ button.

Playback will stop, and recording pause status will be restored.

Note:

- During playback of movie, playback sound will be heard from the speaker. Adjust the sound volume using the volume control buttons (◀, ▶).
- You can play back the audio recorded in Dolby AC 3 (2ch).
- To temporarily stop playback, press the ►/|| button. Press the ►/|| button again to restart playback.
- Even if you stop playback midway and immediately start recording again, the new image will be recorded after the last scene on disc or card (the previous images will not be overwritten).
- Image data edited on PC or certain types of image data may not appear on this DVD Video Camera.
- Image data recorded on another camcorder may not be playable on this DVD Video Camera.
- Depending on the amount of data to be played back, it may take some time for the playback image to appear.
- Do not operate the power switch or remove the card while the ACCESS/PC or CARD ACCESS indicator is lit or blinking: Doing so may damage the card or the data on card.

Playback from Start of Disc or Card

Use the Go To function (P. 60) or Disc Navigation function (P. 90) to play back from the start of disc or card.

RAM

R

Search Playback of Movie

During playback, tilt the joystick to right or left and hold it: Search playback will start.

Hold to right: Scenes will be visually scanned forward

Hold to left: Scenes will be visually scanned backward

Release the joystick when you find the desired image: Normal playback will start from that point.

Note:

- When you skip or search scenes from playback or playback pause, the screen will be dark briefly.
- See page 143 if search playback does not operate normally.

RAM

R

Frame Advance/Frame Back/Slow Playback of Movie

During playback pause, tilt the joystick: Frame advance, frame back or slow playback will start.

Tilt to right once : Picture will advance one frame.

Tilt to left once : Picture will go back one frame.

Hold to right : Forward slow playback

Hold to left : Reverse slow playback

After frame advance, frame back or slow playback, the DVD Video Camera will enter the playback pause status.

Note:

- In forward slow, a rapidly moving subject image may be distorted.
- The intervals for playing back frames in frame advance/ frame back/slow playback are as follows:
Frame advance and forward slow: Approx. 0.03 second
Frame back and reverse slow: Approx. 0.5 second
- No sound will be heard during search playback or slow playback.

Skip Playback of Movie

During playback, tilt the joystick up or down to locate the start of desired scene.

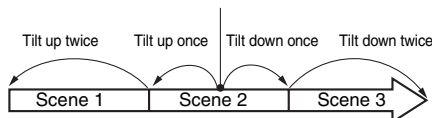
Tilt down once : To skip to the first image of the scene following the one being played back, and start playback.

Tilt up once : To return to the first image of the scene being played back, and start playback.

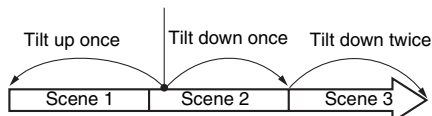
Hold down : To continuously locate the beginnings of scenes, starting from the scene following the scene being played back. When the desired image appears, release the joystick: Playback will start from that point.

Hold up : To continuously locate the beginnings of scenes backward, starting from the scene preceding the scene currently being played back. When the desired image appears, release the joystick: Playback will start from that point.

Portion being played back



Portion being played back



Tilting up the joystick at a portion several seconds from the start of scene being played back will return to the start of the scene preceding that being played back.

Note:

- If you perform skip playback during playback pause, the DVD Video Camera will enter the playback pause status at the beginning of the located scene.
- Tilting down in the last scene on disc will set the DVD Video Camera to the playback pause status at the last image.
- See "Check 3" on page 143 if search playback does not operate normally.

Playing Back Stills

Tilt the joystick up or down during playback to quickly play back stills in sequence.

Tilt down once : To display stills one by one forward

Tilt up once : To display stills one by one backward

[When using disc]

Releasing the joystick will start continuous playback.

[When using card]

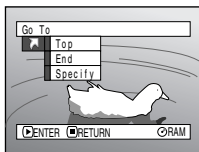
When the joystick is released, the photo at that point will be displayed, and then the DVD Video Camera will enter the playback pause status.

Set the slide show function for continuous display (P. 125).

Jumping to specified Point (Go To)

1 Press the MENU button during playback.

2 Choose the option (point you want to go to), and then press the ►/II button.



Top : To go to the start, and enter playback pause.

End : To go to the end of last scene, and enter playback pause.

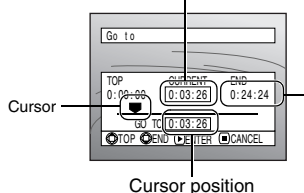
Specify : To go to a specified point and enter playback pause. See the following for details.

Specifying the point to view

1 Choose "Specify" in step 2 above, and then press the ►/II button.

The screen for specifying the point to go to will appear.

Position of currently played back image Total recording time of all selected scenes



Cursor position

3 Press the ►/II button to enter the selection.

The DVD Video Camera will go to the specified point and enter the playback pause status.

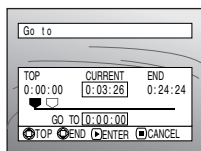
To cancel the "Go To" procedure midway, press the ■ button before going to the specified point.

Note:

- If multiple scenes are selected using the Disc Navigation function or SELECT button, choosing "Top" will jump to the beginning of selected scenes (P. 119).
- When multiple scenes are selected, the total time of selected scenes will appear in the "total recording time" display.
- When card is loaded, the number of stills will appear.
- The cursor may not move at same-pitch intervals.

2 Use the joystick to select the desired time of chosen point.

- Tilt up : To select the start.
Tilt down : To select the end.
Tilt to left or right :
—Press once: To move the cursor in 10-second units (1-still units for card)
—Hold down: To move the cursor in 1-minute units (10-still units for card)



(When the start of scene is selected)

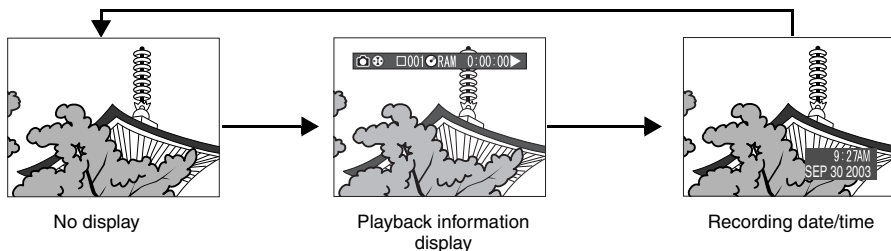
□ Cursor at current image position.

♥ Cursor at (GO TO) position.

On-Screen Information Display

Information Display during Playback

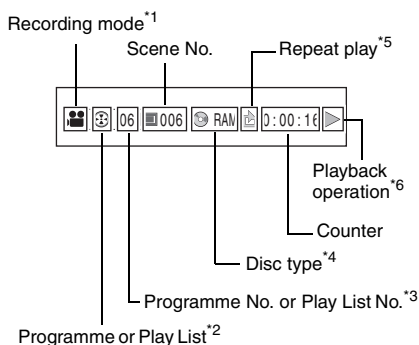
Various types of information on recording will be superimposed on playback image you are viewing.



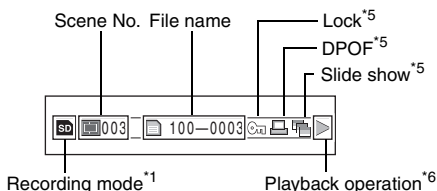
● Switching the information display mode

Press the DISPLAY button: You can switch the display mode of on-screen information.

When using disc:



When using card:



*1 (movie), (still with disc) or (still with card)

*2 Programme or Play List

*3 Number of programme or play list being played back (not displayed when all programmes are being played back)

*4 Refer to "Disc/Card type" on page 53.

*5 Will appear when each function is specified "On"

*6 Standard playback

Playback pause

Forward search playback

Reverse search playback

Forward skip playback

Reverse skip playback

Forward frame advance

Reverse frame back

Forward slow playback

Reverse slow playback

Refer to "Playing Back" beginning on page 57 for how to operate.

The "⏮" mark will appear on the first image on disc.

The "⏭" mark will appear on the last image on disc.

• **Recording date/time display:** Shows the date/time when recording was started. Even when playback starts, the date/time display will not advance.

• **No display:** No information will appear. However, when the mode of playback operation is switched, the symbol will appear for approx. 3 seconds.

Note:

See "Using Disc Navigation" on page 90 and later for explanation on programme and play list.

Manually Focusing Subject

The DVD Video Camera measures the distance to a subject viewed at the centre of screen and automatically focuses on it. If it is difficult to automatically focus the subject, adjust the focus manually.

Focusing During Recording

This DVD Video Camera automatically focuses a subject at the centre of screen (auto-focus).

When the DVD Video Camera is turned on, auto-focus will always be set.

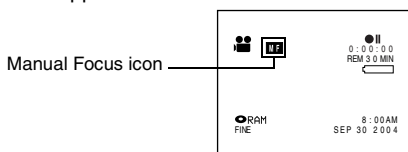
Focusing range

You can switch the display mode of on-screen information:

- On T (tele) side: approximately 1 m from lens surface to infinity
- On W (wide) side: approximately 2 cm from lens surface to infinity

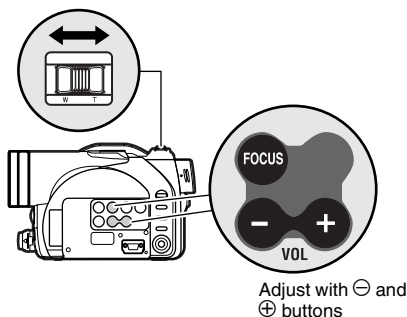
1 Press the FOCUS button during recording.

"MF" will appear on the screen.



2 Press the zoom lever down to "T" control side to zoom in on subject.

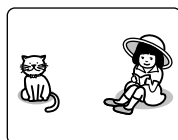
3 Use the $\ominus \oplus$ buttons to adjust the focus, while viewing the image in the viewfinder or on the LCD screen.



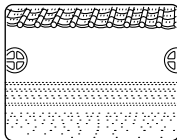
Note:

- Pressing FOCUS will alternate between manual focus and auto focus. With auto focus, no indication will appear on the screen.
- Be sure to zoom in on your subject before manually focusing on it. If you bring the subject into focus at the "W" control side, focus will be faulty when you turn the zoom lever to the "T" control side to zoom in on the subject.
- Manual focus setting will be stored in memory even when the DVD Video Camera is turned off.

Manually focus the following objects, which may not be automatically focused.



Objects not in the centre of screen



Objects with little variation in brightness, such as white wall



Objects that are far and near at the same time



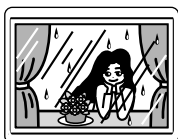
Objects moving rapidly



Objects lit by neon sign, spotlight, etc. which glares or emits strong light



Dark objects



Object behind glass with water droplets, dirt on it



Night view

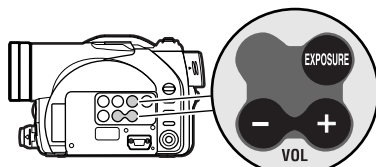
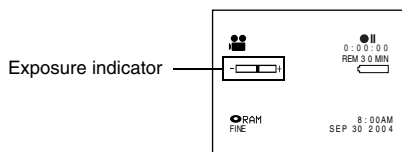
RAM R CARD

Adjusting Exposure Manually

This DVD Video Camera measures the subject brightness and automatically adjusts the exposure. You can also adjust the exposure manually.

1 Press the EXPOSURE button during recording.

The exposure indicator will appear on the screen.



Adjust with \ominus and \oplus buttons

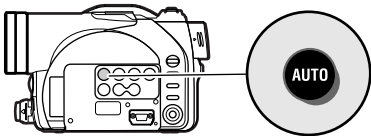
2 Use the \ominus \oplus buttons to adjust the exposure, while viewing the image in the viewfinder or on the LCD screen.

Note:

- Pressing EXPOSURE will alternate between manual adjustment and auto exposure. With auto exposure, no indication will appear on the screen.
- The exposure setting will be stored in memory even when the DVD Video Camera is turned off.

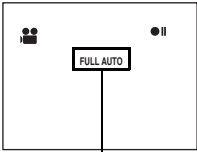
Using Full Auto Function

Pressing the AUTO button will fully automate the camera functions.



1 Press the AUTO button.

“FULL AUTO” will be displayed on the screen of DVD Video Camera for several seconds.



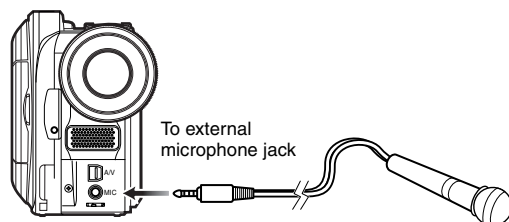
FULL AUTO

The following settings will reset to defaults:

Function	When setting full auto
Program AE	Auto
White balance	Auto
Exposure	Auto
Focus	Auto

Using External Microphone

Connect external microphone (generally available) to the external microphone jack of this DVD Video Camera. Clearer sound can be recorded. Turn on the switch on microphone and start recording. For details on microphone, see "Major Specifications" on page 161.



Note:

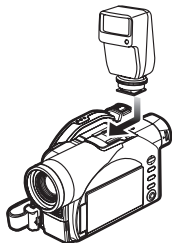
This DVD Video Camera cannot use a plug-in power type microphone (power supplied from video camera).

RAM CARD

Setting Video Flash (Only for VDR-M70GC)

(See "Introduction to Optional Accessory" on page 164)

When recording stills in a dark place, or the subject is lit from rear, it is recommended that you use the optional VW-FLH3E Video Flash*: Refer to the instruction manual of Video Flash for use.



Note:

- The DVD Video Camera automatically sets the shutter speed between 1/800 and 1/30 second (between 1/800 and 1/10 second if Program AE has been set to Low Light) depending on the subject brightness (P. 76).
- When you use Video Flash with the AUTO mode, "A" will be always displayed.
- An aim of an available range of Video Flash is about 1 – 4 m.
- See "Switching Quality of Still Image (Quality)" on page 82 if you want to change the still quality mode.
- However, dark subjects may not be in clear focus even if the Video Flash is used. It is recommended that you light a subject when recording in a dark place.
- When you use accessories for hot shoe, the power supplies are supplied by this DVD Video Camera.

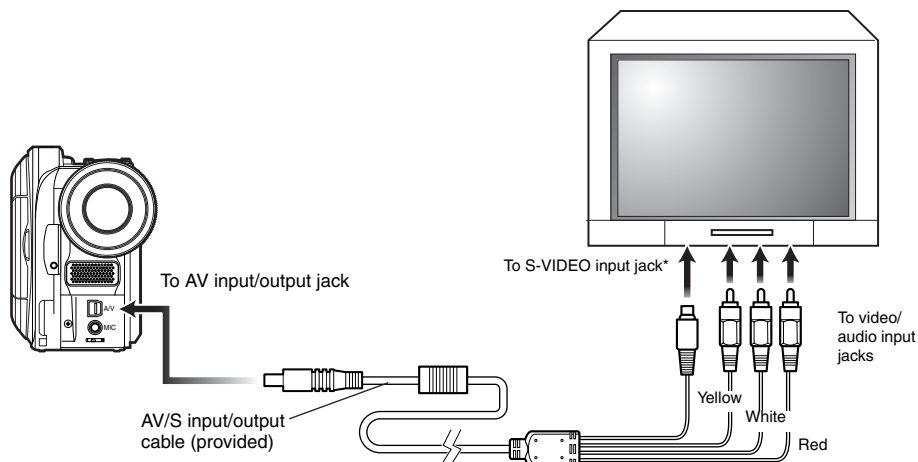
Setting of Video Flash	On-screen information	Manner of emitting light
AUTO	⚡ A	Automatically emits light in dark place or in a place lit from rear.
ON	⚡	Always emits light regardless of brightness.
OFF	⚡	No light emission.

* Unusable on VDR-M50GC.

Viewing on TV Screen

Connecting to a TV

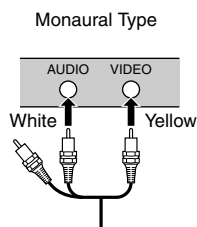
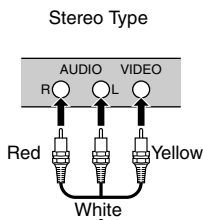
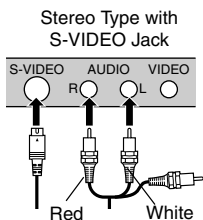
Use the provided AV/S input/output cable to connect the DVD Video Camera to a TV as follows:



* If your TV has an S-VIDEO input jack, you can connect the S-VIDEO plug to it.

Note:

- Using S-VIDEO will deliver clearer playback status.
- Before connecting, make sure that the volume on TV is turned down: Forgetting this may cause howling from the TV speakers.
- Insert the AV/S input/output cable plugs into jacks straight: Obliquely inserting them could damage the jacks.



Viewing on TV Screen

- 1 Turn the TV on and set the input selector to "VCR" whichever applicable Video input.

Refer to the TV instruction manual for how to switch the TV input.

- 2 Turn the DVD Video Camera on.

The image that the DVD Video Camera is seeing will appear on the TV screen.

You can also monitor the image on the LCD screen or viewfinder of the DVD Video Camera.

- 3 Perform playback, recording or editing.

You can perform playback, editing or editing on Disc Navigation while checking on TV screen.

Note:

- Adjust the volume of sound on TV.
- The infrared remote control is useful when operating the DVD Video Camera while viewing an image on TV screen.
- Information that the DVD Video Camera is recording will appear on the TV screen: You can also display only part of information or switch off the display. Refer to "Setting On-Screen Display Output On or Off (OSD Output)" on page 85, and press the DISPLAY button to switch the display status.
- When copy-guarded disc is played back, no image will appear on TV screen.
- If you use TV with wide mode (aspect ratio 16:9) and set the TV to the wide mode, the entire Disc Navigation display may not be displayed on the TV screen. If this happens, release the wide mode setting on TV (see the TV instruction manual for releasing the wide mode).

Playback on DVD Video Recorder/Player

You can use a DVD video recorder (see "Terminology" on page 165) or DVD player that conforms to 8 cm DVD-RAM to play back DVD-RAM discs recorded on this DVD Video Camera. Note, however, that such DVD-RAM discs are not compatible with all DVD video recorders and all DVD players.

1 Remove the disc from Round DVD Holder.

2 Insert the disc into the DVD video recorder/player and play it back.

See the instruction manual for DVD video recorder/player.

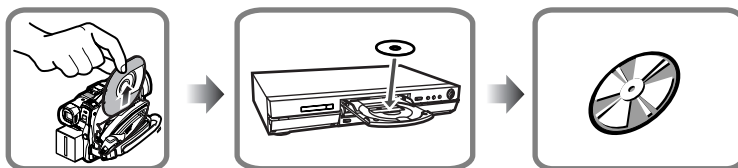
Note:

- Do not insert a DVD-R disc that has not been finalised into a DVD video recorder: The recorded image data may be damaged.
- When playing back disc on another device, the Disc Navigation display will be different from the one on this DVD Video Camera.

RAM CARD

To Customers who Have a DVD Video Recorder with Hard Disk

● The following is possible using the hard disk of DVD video recorder:



1 Writing the images recorded on DVD-RAM disc in DVD Video Camera to hard disk of DVD video recorder.

2 Dubbing the images recorded on hard disk to a DVD-RAM disc or brand-new DVD-R disc. (See the Operating Instructions of DVD video recorder for details.)

■ Request when recording to hard disk of DVD video recorder

- Movie-only recorded discs can be used.
- A disc on which is recorded only still images or a disc on which still images and movies are mixed cannot be recorded to hard disk. (To record images from a mixed disc, refer to [Creating a Movie-only disc].)
- No images recorded on DVD-R disc in this video camera can be recorded to hard disk.
- If your DVD video recorder has a card slot, you can write the still images recorded on a card in this video camera to disc or hard disk, so it is recommended that you record still images on card in this video camera.

[Creating a Movie-only disc] (Use procedure A or B)

- Delete all still images on disc using video camera (See page 96).
 - Be sure to use this DVD Video Camera to delete images: If you use the DVD video recorder to delete images, the images remaining on disc cannot be recorded to hard disk.
 - Use the Disc Navigation menu of DVD Video Camera to copy still images to card, and then delete those still images on disc (See page 103).
- You can also connect the DVD Video Camera and DVD video recorder via the provided AV/S input/output cable to record images to hard disk. Note, however, that the image quality will be slightly inferior.

Playback on DVD Player

1 Finalise a recorded DVD-R disc.

You need to finalise a disc to play it back on DVD player: See page 123.

No further data can be recorded on finalised disc.

Note:

Use this DVD Video Camera to finalise the DVD-R disc recorded on the DVD Video Camera.

2 Remove the disc from Round DVD Holder.

See "Removing and Replacing from/in Round DVD Holder" on page 28.

3 Insert the disc into the DVD player and play it back.

See the instruction manual for DVD player.

Note:

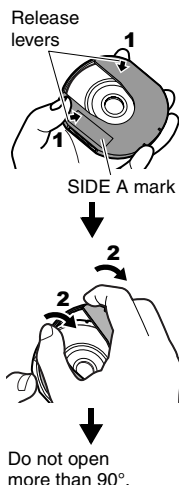
DVD-R discs recorded on this DVD Video Camera can be played back on other DVD players, but playback on all DVD players is not guaranteed.

Playback may not be possible on some DVD players, or it may depend on the recorded status of DVD-R discs: In such cases, play back the DVD-R disc on this DVD Video Camera.

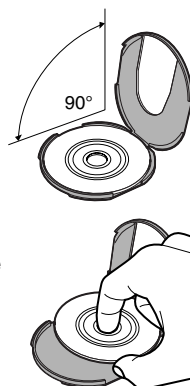
Removing and Replacing from/in Round DVD Holder

How to Remove Disc

- 1 Hold the Round DVD Holder with SIDE A facing up. While pushing the two release levers in the direction of arrows (1) marked on holder, slowly open SIDE A of the holder in the direction of arrows (2), taking care not to drop the disc.

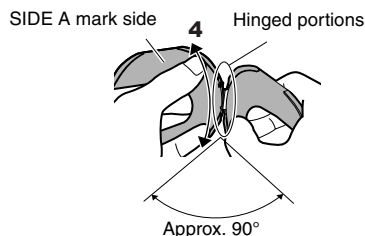


- 2 Without touching the recording/playback surface, hold the disc edge and centre hole to remove it.



When the Hinge of Round DVD Holder Comes off

- 1 Push the hinged portion of the holder piece marked SIDE A with thumb and middle finger, and warp it in the direction of arrows (4).



- 2 Fit the hinged portion of the other holder piece into the warped hinge portion.

Note:

- Handle the disc carefully so that no scratch, dirt, fingerprint or dust adheres to the recording/playback surface.
- When not using the Round DVD Holder, store it in case. Do not leave a bare holder as is.
- Be careful of drop or impact: If you drop the Round DVD Holder, the disc may pop out.
- Do not subject the Round DVD Holder to force.

Disc Cleaning

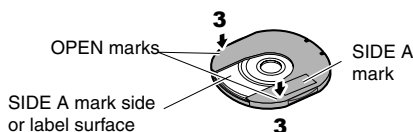
Use a soft, dry cloth to lightly wipe off any dust, dirt, etc. adhering to disc, as shown in the figure. Never use solvent. Do not use thinner, water, anti-static spray, etc. to clean disc.



Use soft cloth to clean from inner to outer circumference in axial direction.

Replacing Disc in Round DVD Holder

- 1 Open SIDE A of the Round DVD Holder, and replace the disc in the holder with the SIDE A mark or label surface facing up, taking care not to touch the disc surface.



- 2 Close SIDE A of the Round DVD Holder, and push it to lock the release levers at positions (3).

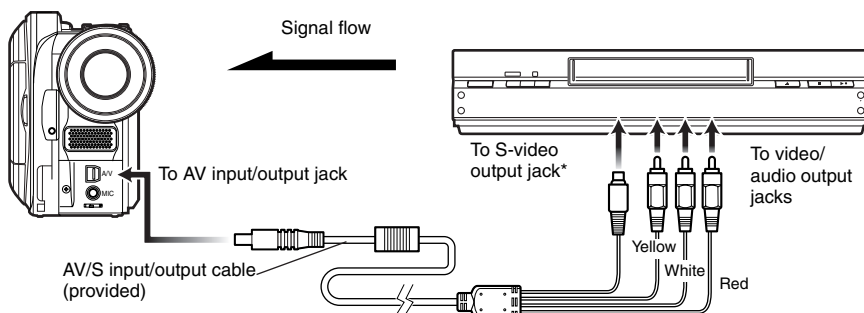
Recording (Dubbing) Images

Before You Begin

- Before connecting this DVD Video Camera to another device, be sure to turn both devices off.
- Insert a recordable disc or card in this DVD Video Camera (see P. 26, 29).

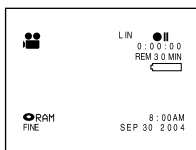
Recording (Dubbing) Images from Other Video Device

You can record (dub) images from other video devices to disc or card in this DVD Video Camera. Use the AV/S input/output cable (provided) to connect the DVD Video Camera to the other AV device as follows:



*If you are using VDR-M70GC and the connected AV device has an S-VIDEO output jack, you can connect the S-VIDEO jack of AV/S input/output cable.

- 1 Set the input source on the DVD Video Camera to "LINE (L IN)". Switch the input referring to "Input Source" on page 83.



- 2 Turn on the connected device, and start playback. The picture will appear on the LCD screen or viewfinder of this DVD Video Camera.
- 3 Press the REC button. Recording will start on this DVD Video Camera. The operation of this line-input recording is the same as for recording movie.

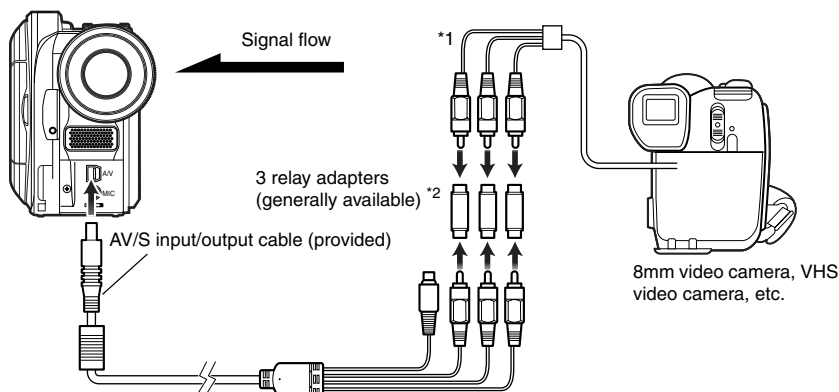
Note:

- If you operate the DVD Video Camera connected to another device, always power the DVD Video Camera from household AC outlet using the AC adaptor.
- Reduce the volume of external input sound heard from the built-in speaker: The loud volume may cause noise to enter the recorded image.
- The recorded contents can be played back in the same manner as when playing back camera images recorded on this DVD Video Camera.

- Still images can also be recorded on DVD-RAM disc or card. See "Switching External Input Recording Method (PHOTO Input)" on page 83 for details, and "Recording Stills" on page 50 for how to record still images.
- The "Input Source" setting will return to "CAMERA" whenever DVD Video Camera is turned off.
- Recording of most images is prohibited by the copyright signal to protect the copyright, except for images recorded on camcorders for personal enjoyment. "COPY PROTECTED" appears in these images: They cannot be recorded on this DVD Video Camera. Typical copyright protected images include those of DVD video, LD, recorded video tapes, some parts of digital satellite broadcasts, etc.
- If a video signal that cannot be read by this DVD Video Camera is present - even in images recorded on the DVD Video Camera for personal enjoyment without copyright signal - the input image may not be recorded normally.
- If the input signal is interrupted by switching the channel on TV or switching the signal using video selector (see "Terminology" on page 165), normal recording cannot be performed.

Recording (Dubbing) Images from Other Video Cameras

You can record (dub) images from other video cameras on a disc or card in DVD Video Camera. Use the AV/S input/output cable (provided) to connect the DVD Video Camera to the other video camera.

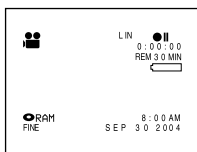


*1: The AV/S input/output cable provided with this DVD Video Camera can be directly connected to some video cameras.

*2: For relay adapters, JVC VZ-97 (a set of 3 adapters) and Audio-Technica ATL4C32M and PGF-517 (a set of 2 adapters) are generally available.

- 1 Set the input source on the DVD Video Camera to "LINE (L IN)".

Switch the input referring to "Input Source" on page 83.



Note:

- Reduce the volume of external input sound heard from the built-in speaker: The loud volume may cause noise to enter the recorded image.
- Still images can also be recorded on DVD-RAM disc or card. See "Switching External Input Recording Method (PHOTO Input)" on page 83 for details, and "Recording Stills" on page 50 for how to record still images.

- 2 Turn on the connected device, and start playback.

The picture will appear on the LCD screen or viewfinder of this DVD Video Camera.

- 3 Press the REC button.

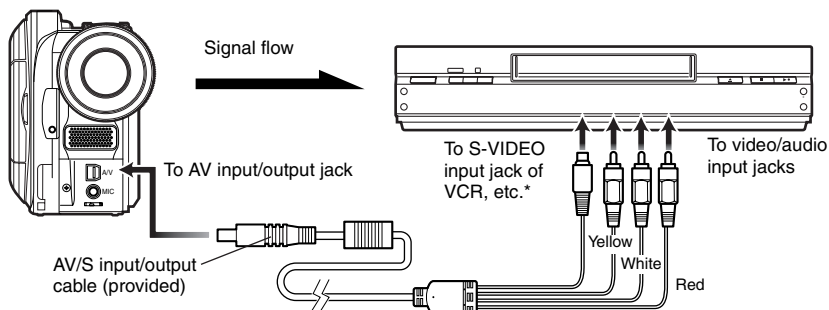
Recording will start on this DVD Video Camera. The operation of this line-input recording is the same as for recording movie.

Recording (Dubbing) Images on Other Video Devices

You can record (dub) images played back on this DVD Video Camera, on other video devices.

Use Disc Navigation to create a play list by selecting desired scenes of those recorded on this DVD Video Camera (P.111).

Use the AV/S input/output cable (provided) to connect the DVD Video Camera to another video device as shown in the following figure:



*If the video device to be connected has an S-VIDEO input jack, you can connect it to the DVD Video Camera.

- 1 Press the DISC NAVIGATION button.
- 2 Press the MENU button.
- 3 Choose "Play" on the "PlayList" menu screen, and then press the ►/II button.
- 4 Use the "Start PlayList" screen to select the play list to be recorded (dubbed), and then press the record button on the connected device: The DVD Video Camera will start playback and the recorded device will record (dub) it.

Note:

- Using S-VIDEO will deliver clearer images.
- Audio is heard from the speaker: If the volume is too high, noise may enter the dubbed image.
- Be sure to use the AC adaptor to power the DVD Video Camera from household AC outlet, to prevent battery power from shutting off during recording on another video device.

Advanced Techniques

This section explains about various settings to further extend the usefulness of this DVD Video Camera.

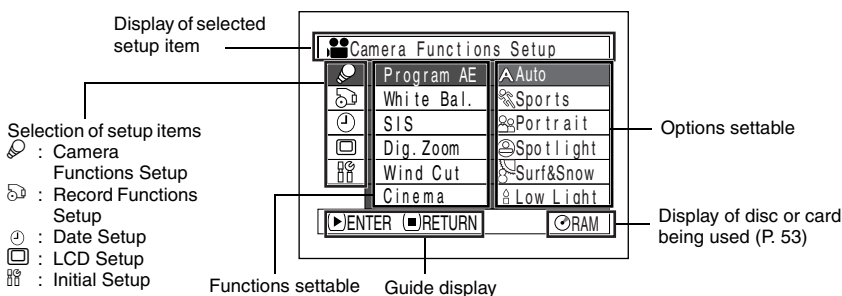
Understanding Flow of Menu

Press the MENU button during recording pause: The “Camera Functions Setup” menu screen will appear.

Tilt the joystick up, down, to left or right to select a menu item, and then press the ►/II button to choose the option.

The screens used here to explain are displayed when DVD-RAM disc is used. Some items will not appear when a DVD-R disc or card is used, or when no disc or card is inserted.

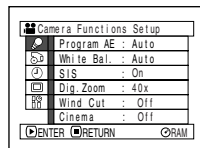
<Interpreting screen for setting>



●Flow of Menu

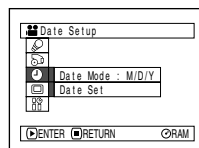
Refer to page indicated for details of each function.

Camera Functions Setup



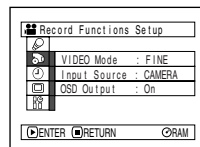
Program AE (P. 76)
White balance (P. 77)
SIS (P. 79)
Digital zoom (P. 55)
Wind Cut (P. 79)
Cinema (P. 80)

Date Setup



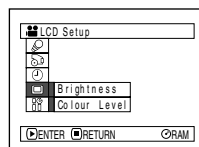
Display format (P. 39)
Date setting (P. 38)

Record Functions Setup



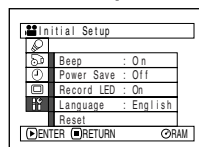
Movie quality (P. 81)
[The quality mode will appear when using card (P. 82)]
External still input (P. 83)
On-screen information display output (P. 85)

LCD Setup



Brightness (P. 86)
Colour density (P. 86)

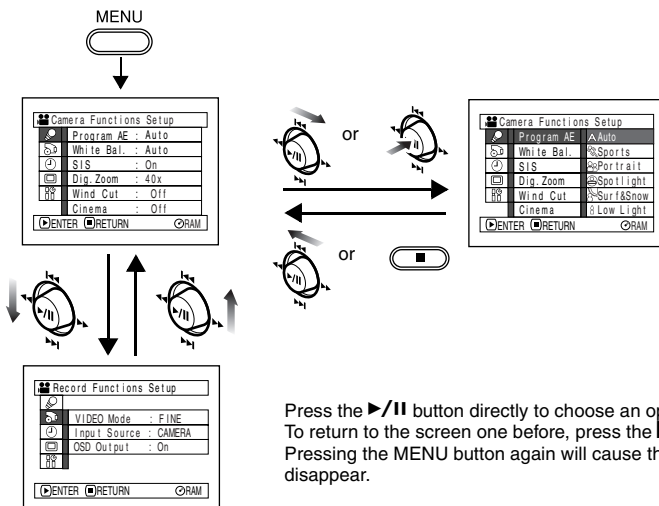
Initial Setup



Beep (P. 87)
Power save (P. 87)
Recording LED (P. 88)
Language selection (P. 88)
Reset (P. 89)

You can use the joystick on DVD Video Camera to select various setting options in menu and designate them.

Press the MENU button.



Press the ►/II button directly to choose an option from menu. To return to the screen one before, press the ◀ button. Pressing the MENU button again will cause the menu screen to disappear.

Note:

- Pressing the MENU button during recording will not work.
- The menu screen will disappear when it is left for approx. one minute without any operation.

- With VDR-M70GC, if the MENU button is pressed with a still image displayed, the size of image will change. Pressing the MENU button again will restore the original image size.

VQ70K98

Setting Up Camera Functions

Before You Begin

- See page 75 for how to set.
- No menu screen appears with external input.

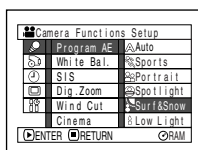
Selecting Shooting Mode to Match the Subject (Switching Programme AE Mode)

This DVD Video Camera automatically sets the shutter speed and aperture according to the subject brightness for optimum recording: You can also specify one of six modes depending on the subject conditions, recording environment or purpose of filming.

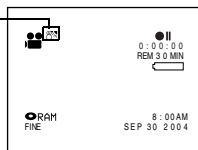
- 1 Press the MENU button, use the joystick to choose "Program AE" on the "Camera Functions Setup" screen, and then press the ►/II button.

The options will appear on the right of "Program AE".

- 2 Use the joystick to choose the desired option, and then press the ►/II button: The selected option will be set.



Selected AE mode

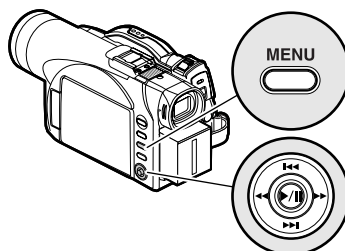


- 3 Press the MENU button to end the setting.

The menu screen will disappear.

Note:

- You can check the selected AE mode by the on-screen information display. However, nothing will appear in the Auto mode.
- The shooting mode set as above will be stored in memory even if the DVD Video Camera is turned off.



Tilt up/down and to left/right to select, and then press ►/II to designate.

Auto : The video camera automatically judges the subject and surrounding environment for optimum recording.

Sports : Reduces blurring when recording rapidly moving subjects such as in golf or tennis. If the Sports mode is used under a fluorescent light, the image may flicker: In this case, use the Auto mode for recording.

Portrait : Creates a shallow depth of field so that the person or subject appears against a softened background.

Spotlight : Prevents overexposure of subject portrait face, etc. when strong light strikes the subject, as in a wedding or on stage.

Surf & Snow : Prevents underexposure of subject portrait face, etc. in a place where reflection of light is intense, such as at the seaside in midsummer or on a ski slope.

Low Light : Allows user to record in a dark place even with decreased lighting: However, an after-image will appear with a moving subject.

Note that the Low Light mode cannot be used when the recording quality mode is STD.

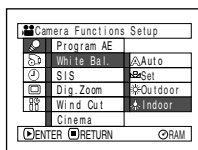
If there is difficulty in automatically focusing subject image, adjust the focus manually.

Adjusting Colour (White Bal.)

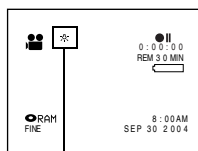
This DVD Video Camera automatically adjusts the colour of subject. Change the white balance setting depending on the recording conditions.

Mode	Setting content	On-screen display
Auto	White balance always automatically adjusted	None
Set	You can manually adjust white balance to match the light source or situation	
Outdoor	To record in fine weather	
Indoor	To record under incandescent light, halogen light or bulb-colour type fluorescent light	

- 1** Press the MENU button, choose “White Bal.” on the “Camera Functions Setup” menu screen, and then press the ►/II button.



- 2** Choose the desired option, and then press the ►/II button.

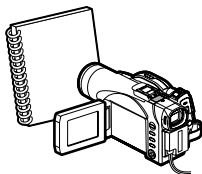


White balance mode

- 3** Press the MENU button to end the setting.

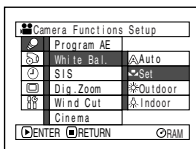
●Setting white balance manually

- 1 Point the DVD Video Camera at a white object so that it fills the screen. Use an object that is not transparent.

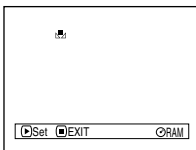


(White shirt or thick paper)

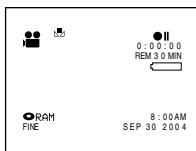
- 2 Press the MENU button, choose "White Bal.", "Set", and then press the ►/II button.



- 3 Press the ►/II button: The "L" indicator will change from blinking to a steady light: The steady light indicates that the white balance setting is complete.

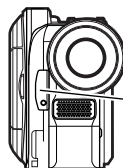


- 4 Press the ■ button to end the setting.



Note:

- The white balance mode can be confirmed using the on-screen information.
- Only the Set mode will return to Auto when the DVD Video Camera is turned off. (Another mode of the white balance will be stored in memory.)
- Do not block the infrared sensor with hand, etc.



Infrared sensor block

- If a tele or wide-conversion lens is used, the auto white balance may not operate depending on the recording conditions. If this happens, set to the mode to match the recording conditions, or manually set the white balance.
- Be sure to remove the lens cap before turning the DVD Video Camera on: If the DVD Video Camera is turned on with the lens capped, the white balance will not work normally.

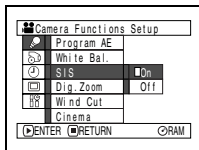
Note:

- It is recommended that you specify "Dig. Zoom: Off" (See page 55) before setting white balance.
- Do not use a coloured object when setting the white balance: The appropriate tint cannot be set.
- The white balance cannot be set when the digital zoom is engaged or under low light: The "L" indicator will blink at this time.
- If the white balance that was manually set before is kept, the "L" indicator will blink (re-setting the white balance will change the "L" indicator to a steady light).

Using the Image Stabiliser (SIS)

When you use zoom to record a magnified subject image, it will correct fuzziness in the recorded image.

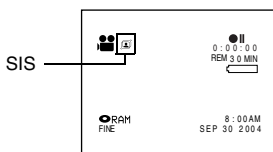
- 1 Press the MENU button, choose "SIS" on the "Camera Functions Setup" menu screen, and then press the ►/II button.



- 2 Choose the "On" or "Off", and then press the ►/II button.
- 3 Press the MENU button to end the setting.

●Checking SIS On or Off

You can check SIS On or Off by the on-screen information display.



After recording with SIS set to "Off", it is recommended that you return the setting to "On" and then turn the DVD Video Camera off, unless you normally record with "Off" setting. This function is effective only during movie recording: It will not work during still recording.

Note:

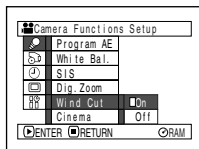
- The SIS setting will be stored in memory even when the DVD Video Camera is turned off.
- Although you can switch SIS between on and off during still recording, the setting will be effective only during movie recording.
- It is recommended that you specify "SIS Off" when using the DVD Video Camera on a desk or tripod.
- When "SIS On" is specified, there will be a slight difference between the actual movement and the movement on screen.
- Gross camera shake may not be entirely corrected even if "SIS On" is specified.
- SIS may not operate correctly when the tele or wide-conversion lens (generally available) is used.
- When you record pictures with setting 10x or more of magnification and turning the SIS to "On" in dim places, after-images may stand out. In this case, we recommend using a tripod with turning the SIS to "Off" (only for VDR-M50GC).
- The SIS function cannot be used when still images are recorded on the card (only for VDR-M70GC).

Reducing Wind Noise during Recording (Wind Cut)

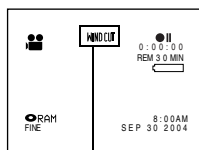
When recording sound from the microphone built into this DVD Video Camera, you can reduce wind noise in recording.

If "Wind Cut: ON" is specified, the low-frequency components in the sound picked up by microphone will be cut off during recording: This makes it easier to hear the target voice or sound during playback.

- 1 Press the MENU button, choose "Wind Cut" on the "Camera Functions Setup" menu screen, and then press the ►/II button.



- 2 Choose "On", and then press the ►/II button.
- 3 Press the MENU button to end the setting.



Wind Cut icon

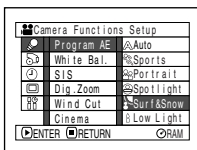
Note:

- You can also use the on-screen display to confirm that the Wind Cut has been set.
- The Wind Cut setting will be stored in memory even when the DVD Video Camera is turned off.
- The Wind Cut function will work only during movie recording.
- The Wind Cut function works only with the built-in microphone: It will not function when using an external microphone (P. 65).

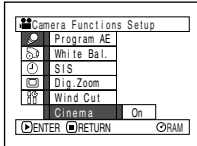
Switching to Cinema Mode

If you intend to play back recorded images on a wide-screen TV, it is recommended that you switch the screen size to cinema mode.

- 1 Press the MENU button, choose "Cinema" on the "Camera Functions Setup" screen, and then press the ►/II button.

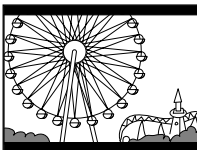


- 2 Choose "On", and then press the ►/II button.



- 3 Press the MENU button to end the setting.

Black bands will appear across the top and bottom of screen.



Note:

The black bands that appear across the top and bottom of screen will not be recorded. If you record in the cinema mode and play back on a TV other than wide-screen TV, the portions masked by the black bands will also be displayed. Use the black bands as a guide for recording when playing back on a wide-screen TV.

Setting Up Record Functions

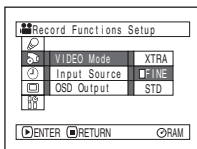
RAM R

Switching Movie Quality (VIDEO Mode)

Choose the movie quality from “XTRA” (only with DVD-RAM disc), “FINE” and “STD”.

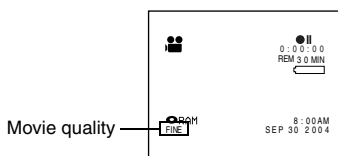
It is recommended that you record critical subjects in the “XTRA” or “FINE” when you are using a DVD-RAM disc, or in the “FINE” with a DVD-R disc.

- 1 Press the MENU button, choose “VIDEO Mode” on the “Record Functions Setup” menu screen, and then press the ►/II button.



- 2 Choose the desired quality mode, and then press the ►/II button.

- 3 Press the MENU button to end the setting.

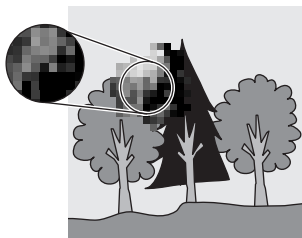


Note:

- The movie quality setting will be stored in memory even when the DVD Video Camera is turned off.
- The “VIDEO Mode” setting will not change even if the DVD-RAM disc is replaced with a DVD-R disc, or vice versa. However, the setting will switch to “FINE” in the following cases:
 - When the mode is set to “XTRA” with a DVD-RAM disc inserted and then the disc is replaced with a DVD-R disc
- When using DVD-R disc, you cannot switch the movie quality while recording on the disc: The DVD Video Camera will be automatically set to the movie quality first used with the disc for recording.
- The movie quality setting is effective only during movie recording: Switching the movie quality will not work during still recording.

Block-like noise may appear in recorded image, or the outline of subject image is distorted under the recording conditions listed below: Pan the DVD Video Camera as slowly as possible. (Block noise is likely to appear in the “STD”):

- If there is a complicated pattern in background (as in following figure on left)
- If the DVD Video Camera is moved excessively or quickly
- If subject is moving rapidly even when the DVD Video Camera is not moving



(Image when block-like noise occurs)



(Image without block-like noise)

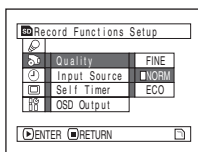
CARD

Switching Quality of Still Image (Quality)

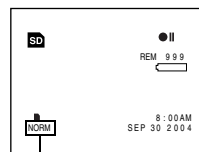
You can switch the still recording quality only when using card.

It is recommended that you use “FINE” when recording vital images.

- 1 Press the MENU button, choose “Quality” on the “Record Functions Setup” menu screen, and then press the ►/|| button.



- 3 Press the MENU button to end the setting.



Still recording quality

- 2 Choose the option you want, and then press the ►/|| button.

Note:

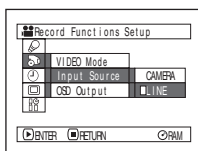
- The still quality setting will be stored in memory even when the DVD Video Camera is turned off.
- “OSD Output” is displayed only when “Input Source” is set to “CAMERA”.

Receiving Image from Another Device (Input Source)

If you wish to input an image from another device to this DVD Video Camera, you must first switch the setting on the DVD Video Camera. Refer to the explanation starting from page 71 on how to connect the DVD Video Camera to other devices or record images input from them.

Setting	Contents	On-screen display
CAMERA	Usually select this option.	No display
LINE	To input image from another device.	L IN

- 1** Press the MENU button, choose "Input Source" on the "Record Functions Setup" menu screen, and then press the ►/II button.

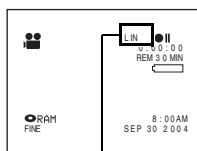


- 2** Choose "LINE", and then press the ►/II button.

- 3** Press the MENU button to end the setting.

Note:

- The "Input Source" setting will return to "CAMERA" whenever the DVD Video Camera is turned off.
- And if you pull or push the card on the "SD" mode, "Input Source" setting will return to "CAMERA".
- "PHOTO Input" is displayed only when "Input Source" is set to "LINE".
- "OSD Output" is displayed only when "Input Source" is set to "CAMERA".



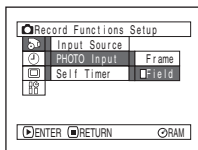
External input icon

Switching External Input Recording Method (PHOTO Input)

When "Input Source: LINE" is specified, you can record stills of externally input images on either a DVD-RAM disc or a card. The DVD Video Camera can record an external image with little movement by specifying "Frame", but "Field" is recommended for recording image with movement.

Recording format	Details of setting	On-screen display
Frame	Does not suit recording of frequently moving video subjects, despite high image quality. Frame suits recording of less moving video.	(with disc) (with card)
Field	Suitable for recording of frequently moving video subjects.	(with disc) (with card)

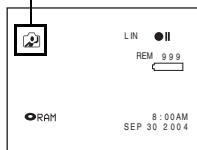
- 1** Press the MENU button, choose "PHOTO Input" on the "Record Functions Setup" menu screen, and then press the ►/II button.



- 2** Select the desired option and then press the ►/II button.

- 3** Press the MENU button to end the setting.

Still external input mode



Note:

- The PHOTO Input setting can be confirmed using the on-screen information.
- The PHOTO Input setting will be stored in memory even when the DVD Video Camera is turned off.
- Refer to "Recording (Dubbing) Images" on page 71 to see how to connect the DVD Video Camera to another device.
- "PHOTO Input" is displayed only when "Input Source" is set to "LINE".
- "OSD Output" is displayed only when "Input Source" is set to "CAMERA".

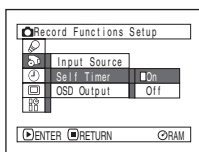
RAM CARD

Self-Timer

You can record photos using the self timer function, as with ordinary cameras.

The self timer function is valid only when recording photos (stills).

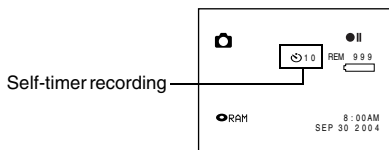
- 1 Press the MENU button, choose "Self Timer" on the "Record Functions Setup" menu screen, and then press the ►/II button.



- 2 Select "On", and then press the ►/II button.

The self-timer will be set.

- 3 Press the MENU button to end the setting.



- 4 Press the REC button.

The recording indicator at the front of DVD Video Camera will blink.

The self-timer indicator will start to count down, and recording will commence approximately 10 seconds later.

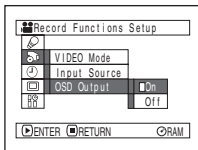
Note:

- You can also check that self-timer has been set by reviewing the on-screen information.
- To release the self-timer mode, choose "Off" on the menu screen or turn DVD Video Camera off.
- To suspend self-timer, press the REC button again before recording starts, or press the ■ button.
- "PHOTO Input" is displayed only when "Input Source" is set to "LINE".
- "OSD Output" is displayed only when "Input Source" is set to "CAMERA".

Setting On-Screen Display Output On or Off (OSD Output)

If you connect this DVD Video Camera to a TV to view images on TV screen, you can switch off the on-screen information (displayed in the viewfinder or on the LCD screen) from the TV screen.

- 1 Press the MENU button, choose "OSD Output" on the "Record Functions Setup" menu screen, and then press the ►/II button.

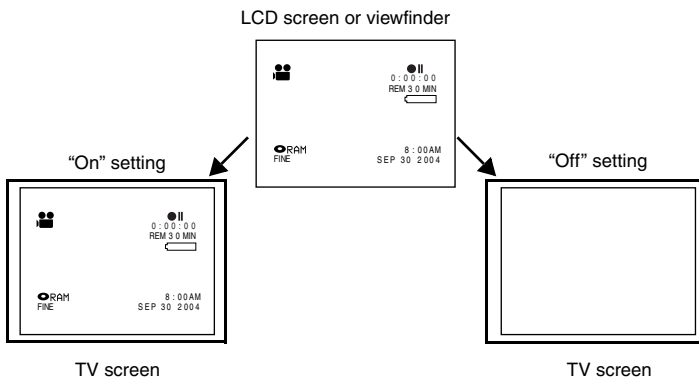


- 2 Choose "On" or "Off", and press the ►/II button.

- 3 Press the MENU button to end the setting.

Note:

- The "OSD Output" setting will be stored in memory even when the DVD Video Camera is turned off.
- Even if "Off" is chosen, the on-screen information will appear during playback. See page 61 for playback on-screen information display.
- Even after the on-screen information is removed from the TV screen, it will still appear in the viewfinder or on the LCD screen.
- The on-screen display output functions only when the "Input Source" setting is set to "CAMERA": It cannot be set during "LINE".
- "OSD Output" is displayed only when "Input Source" is set to "CAMERA".

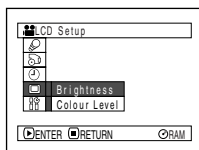


LCD Setup

This function allows you to adjust the brightness and colour density of LCD screen during recording and playback.

Setting Brightness of LCD Screen (Brightness)

- 1 Press the MENU button, choose "Brightness" on the "LCD Setup" menu screen, and then press the ►/II button.

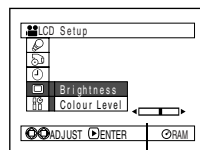


The brightness adjustment bar will appear on the screen.

- 2 Use the joystick for adjustment.

Tilt to left : The screen becomes dimmer

Tilt to right : The screen becomes brighter



Brightness adjustment bar

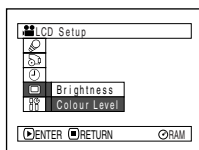
- 3 Press the MENU button to end the setting.

Note:

The brightness setting will be stored in memory even when the DVD Video Camera is turned off.

Setting Colour Density of LCD Screen (Colour Level)

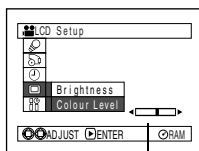
- 1 Choose "ColourLevel" on the "LCD Setup" menu screen, and then press the ►/II button.



The colour density adjustment bar will appear on the screen.

- 2 Use the joystick for adjustment.

Tilt to left : For lighter colour
Tilt to right : For denser colour



Colour density adjustment bar

- 3 Press the MENU button.

Note:

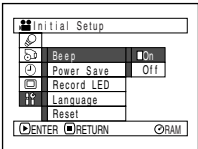
- The colour level setting will be stored in memory even when the DVD Video Camera is turned off.
- Even if the brightness or density of LCD monitor screen is changed, the brightness or density of the recorded image itself will not change.

Initial Settings

Switching Operating Sound On or Off (Beep)

Setting	Content
On	Beep is heard when the power switch is changed over, the REC button is pressed, etc.
Off	No beep is heard.

1 Press the MENU button, choose “Beep” on the “Initial Setup” menu screen, and then press the ►/II button.



2 Select “On” or “Off”, and then press the ►/II button.

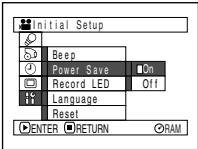
3 Press the MENU button to end the setting.

Note:
The “Beep” setting will be stored in memory even when the DVD Video Camera is turned off.

Turning DVD Video Camera Off Automatically (Power Save)

Setting	Content
On	To engage power save. If the DVD Video Camera is left in the recording pause status without being operated for 5 minutes, it will automatically turn off to prevent the battery from discharging needlessly.
Off	To cancel power save

1 Press the MENU button, choose “Power Save” on the “Initial Setup” menu screen, and then press the ►/II button.



Note:

- To turn the DVD Video Camera on again from automatic off activated by the power save function, set the power switch to “OFF”, and then set it to “ ”, “ ” or “SD”.
- The Power Save setting will not appear in the on-screen information display.
- The Power Save setting will be stored in memory even when the DVD Video Camera is turned off.

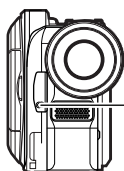
2 Select “On” or “Off”, and then press the ►/II button.

3 Press the MENU button to end the setting.

Turning Record LED On or Off (Record LED)

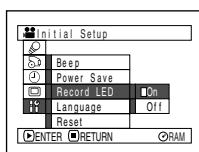
You can switch off the recording indicator on the front of DVD Video Camera even during recording.

Setting	Content
On	The recording indicator will light red to show that the DVD Video Camera is recording.
Off	The recording indicator will not light even during recording.



Recording indicator

- 1 Press the MENU button, choose "Record LED" on the "Initial Setup" menu screen, and then press the ►/II button.



- 2 Select "On" or "Off", and then press the ►/II button.

- 3 Press the MENU button to end the setting.

Note:

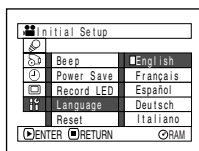
- The Record LED setting will not appear in the on-screen information display.
- The Record LED setting will be stored in memory even when the DVD Video Camera is turned off.
- Specify "Record LED: Off" when recording a subject behind a glass or water tank that reflects light: The reflected light of the recording indicator will not be recorded.
- When using the self-timer function, the recording indicator will blink when the REC button is pressed regardless of whether Record LED is On or Off.

Changing Display Language (Language)

You can change the language used to display the menu and information.

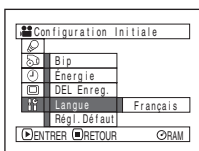
The following shows that English is changed to French.

- 1 Press the MENU button, choose "Language" on the "Initial Setup" menu screen, and then press the ►/II button.



"English" has been set.

- 2 Select "Français", and then press the ►/II button.



- 3 Press the MENU button to end the setting.

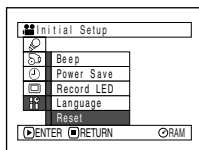
Note:

The language setting will be stored in memory even when the DVD Video Camera is turned off.

Resetting Menu Settings to Defaults (Reset)

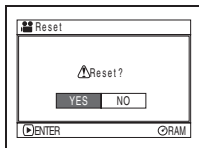
You can restore menu settings to defaults (initial settings at the factory (P. 160)). (Note, however, that the date/time will not be reset.)

- 1 Press the MENU button, choose "Reset" on the "Initial Setup" menu screen, and then press the ►/II button.



The screen for verifying reset will appear.

- 2 If you are sure that you wish to reset, use the joystick to choose "YES", and then press the ►/II button.



The setting items have now been reset to defaults.

- 3 Press the MENU button to end the setting.

Note:

To cancel resetting midway, choose "NO" on the screen for verification in step 2 or press the ■ button.

Using Disc Navigation




Starting Disc Navigation

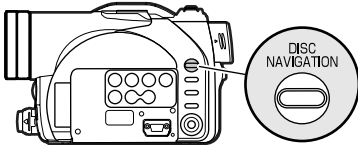
Disc Navigation is a tool for editing scenes recorded on this DVD Video Camera.

Here is an explanation on “scene” and “programme”, so that you will be able to make most use of Disc Navigation function.

The screens in this instruction manual are basically those that will appear when DVD-RAM disc is used: Some items will not appear when DVD-R disc or card is used, but the operation is the same.

Before You Begin

- Turn the DVD Video Camera on (P.48).
- When using disc: Set the power switch to “ ” or “ ”.
- When using card: Set the power switch to “ ”.



1 Press the DISC NAVIGATION button.


The Disc Navigation screen (shown on page 91) will appear.

Note:

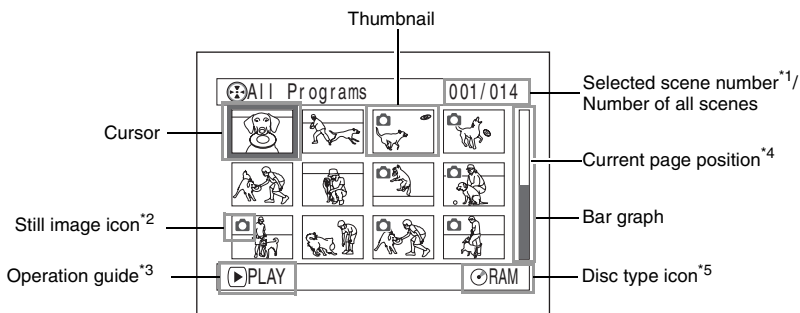
Do not proceed with a following step while the disc is being recognised or the ACCESS/PC indicator is blinking.

2 Press the DISC NAVIGATION button.

Disc Navigation will be terminated and the DVD Video Camera will enter the recording pause status.

You can also press the  button to end Disc Navigation.

The following screen will appear when DVD-RAM disc is used: Some display components will not appear when DVD-R disc or card is used.



*1 Scene number refers to display number on thumbnail display screen.

*2 No still icon will appear for card.

*3 The operation guide will vary depending on the operation status of DVD Video Camera.

*4 Appears when 13 scenes or more have been recorded.

*5 "◉R" appears for DVD-R disc. "◻" will appear for card.

Note:

- The background colour of screen allows you to identify whether disc or card is in DVD Video Camera.
 - Purple: When disc is inserted
 - Light blue: When card is inserted
- Pressing the DISPLAY button will display the recording date/time of the scene on which the cursor is placed in the space for operating guide. Pressing DISPLAY again will display the operating guide.
- If no disc or card is inserted, the Disc navigation screen cannot be displayed even by pressing the DISC NAVIGATION button.
- Each time Disc Navigation is started with a DVD-R disc inserted, message "Creating Thumbnail ..." will appear. After the message appears, the Disc Navigation screen will appear.

- If the following disc or card is inserted, the Disc Navigation screen will appear or some message will be displayed:
 - Write-protected disc
 - Locked card
 - Finalised DVD-R disc
- Do not leave the disc navigation screen displayed on TV to which the DVD Video Camera is connected: Doing so could damage the TV screen, possibly by burning.

Playing Back from Disc Navigation Screen

1 Press the DISC NAVIGATION button.

2 Use the joystick to select the desired scene.

The selected scene will be framed: This is called a “cursor”.

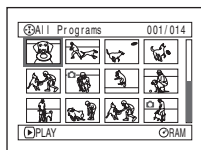
3 Press the ►/II button.

Playback will start from the selected scene.

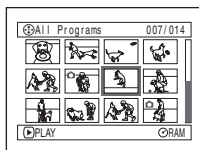
Note:

Tilting the joystick to left or right will move the cursor to the preceding or following scene.

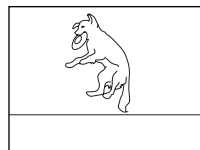
Tilting it up or down will move to preceding or following page.



Up or Down
Left or Right



►/II

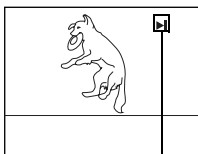


● When playback ends:

The DVD Video Camera will enter the playback pause status at the last image of last scene.

Pressing the ■ or DISC NAVIGATION button will restore the Disc Navigation screen.

When the playback pause status continues for as long as 5 minutes, the Disc Navigation screen will automatically be restored.



Playback pause

Note:

- Press the ►/II button to temporarily stop playback. Pressing ►/II again will start from that point.
- If you press the ►/II button after playback of the last scene on disc finishes, playback will start again from the beginning of disc.
- Pressing the ■ button will always restore the Disc Navigation screen.
- With playback on Disc Navigation, you can select desired scenes for playback and skip unnecessary scenes.
- When playing back a still with a large number of pixels on card, “Playback.” will appear, and it will take some time for the still to appear.

● Playing back stills

A still will be displayed for approx. 3 seconds.

When playing back stills on card, playback will stop after each still playback.


Selecting Multiple Scenes

- 1 Press the DISC NAVIGATION button.
- 2 Use the joystick to select the desired scene.
- 3 Press the SELECT button once:

The selected scene will be framed in red and yellow.

Repeat steps 2 and 3 to randomly select multiple scenes.

To cancel a selected scene, select the scene to be cancelled, and then press the SELECT button.

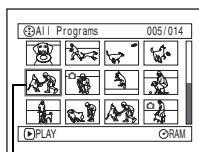
To cancel all selected scenes, press the  button.

Note:

Although scenes can be randomly selected, playback will always start from the lowest scene number.

Selecting Consecutive Scenes Together

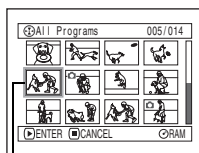
- 1 Press the DISC NAVIGATION button.
- 2 Use the joystick to select the desired scene.




Yellow frame

- 3 Hold down the SELECT button for at least one second:

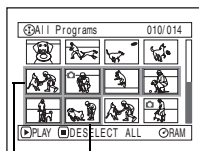
The selected scene will be doubly framed in yellow and blue.



Double frames in yellow and blue

- 4 Use the joystick to select the last scene in the range you want, and then press the  button:

The thumbnails of scenes in the specified range will be framed in red, and then selected.





Red frame

When scenes up to this point are selected

Note:

- You can know the status of scenes from the colours of cursor and bargraph:

Cursor	Bar graph	Status of scenes
Yellow	Light blue	Current cursor position
Blue	Light blue	Range of scenes being selected
Red	Red	Scenes already selected

- Pressing the  button after selecting scenes will play back only the selected scenes from the beginning of each.
- You can also select scenes in reverse from the last scene in the range.
- To release multiple selection, press the SELECT or  button after step 4.
- Up to 999 scenes can be selected for both disc and card.

Disc Navigation Menu

Functions Available with Disc Navigation

Disc Navigation allows you to do the following:

Available function	Disc or card used	Contents	Reference page
Deletion of scenes	RAM CARD	You can delete unnecessary scenes.	96
Editing of scenes	RAM	You can attach fade and skip to a scene, combine scenes, or divide one scene.	98 - 102
Scene information display	RAM R CARD	You can display information on one scene or multiple scenes, such as image quality, recording time, etc.	107
Setting of title	RAM	You can set desired titles to play lists and programmes.	109, 118
Creation of play list	RAM	You can create an original movie by changing the combination of scenes.	111
Disc or Card initialisation	RAM CARD	You can initialise a DVD-RAM disc or card so that it can be used on this DVD Video Camera.	121
Copy from disc to card	RAM	You can copy photos recorded on DVD-RAM disc to card.	103
Disc finalisation	R	You can use this DVD Video Camera to finalise any DVD-R disc recorded on it so that the disc can be viewed on DVD player, etc.	123
Repeat play	RAM R	You can repeatedly play back programmes and scenes.	124
Slide show	CARD	You can play back stills continuously.	125
Remaining display (Capacity)	RAM R CARD	The remaining recordable movie time or number of recordable stills is displayed.	120
Disc protection	RAM	You can protect the DVD-RAM disc to prevent deletion or editing by mistake.	120
Scene lock	CARD	You can lock any scene so that it will not be deleted by mistake: Essential scenes are thereby protected, and recording another still is possible.	104
DPOF setting	CARD	You can set the number of prints for each scene.	105

Note:

Editing functions (thumbnail, skip, fade) are original to this DVD Video Camera. When a disc edited on this DVD Video Camera is directly played back on a DVD-RAM recorder or read into PC, the editing results will not be reflected in the playback or reading. To reflect the editing results, connect both devices using the AV/S input/output cable and then perform recording (dubbing).

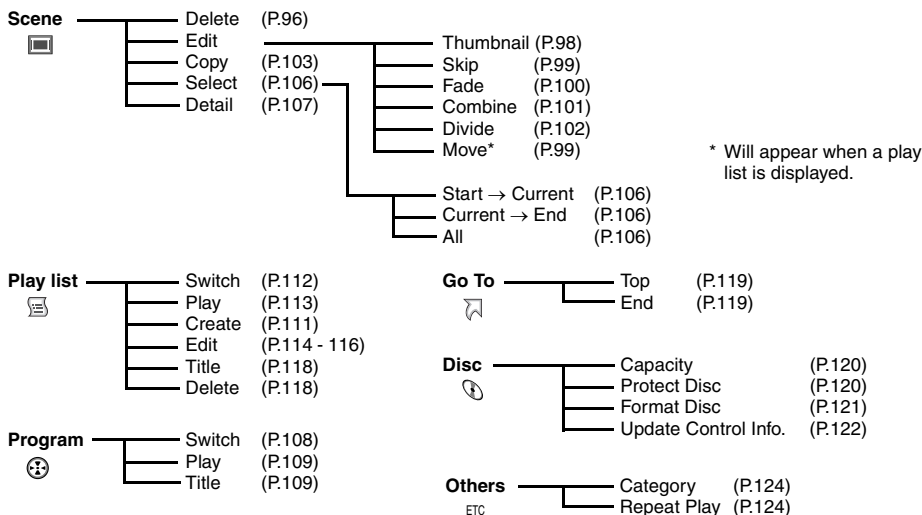
Understanding Flow of Disc Navigation Menu

Press the MENU button on the Disc Navigation screen: The menu screens for Disc Navigation and menu screens for disc and card will appear.

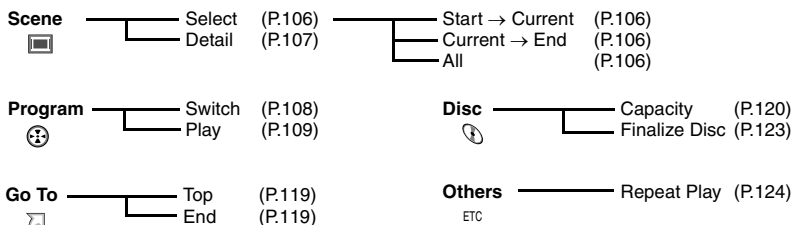
See pages 74-75 and 91 for how to interpret the screen.

Refer to pages indicated for details of settings.

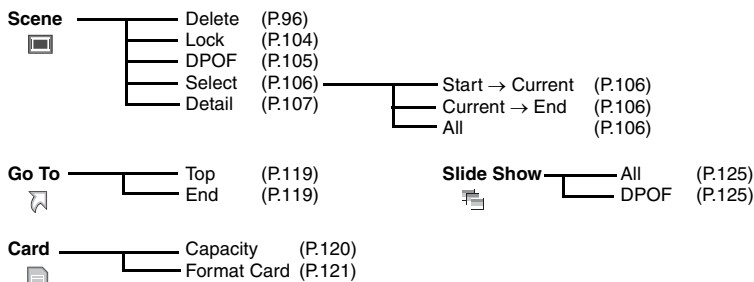
● When using DVD-RAM disc



● When using DVD-R disc



● When using card



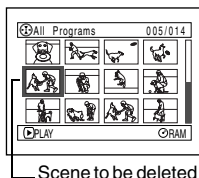
Deleting Scenes (Delete)

You may want to delete unwanted scenes.

Scenes on DVD-R disc cannot be deleted, and menu item "Delete" will not appear with DVD-R disc.

1 Press the DISC NAVIGATION button.

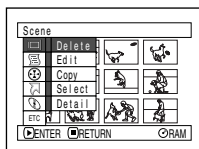
2 Select the scene to be deleted.



Scene to be deleted

3 Press the MENU button.

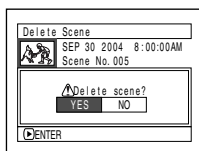
4 Choose "Delete" on the "Scene" menu screen, and then press the ►/II button.



5 The "Delete Scene" screen will appear: If you are sure you want to delete the selected scene, press the ►/II button.

If you want to change the scene to be deleted, you can change it on this screen.

6 The screen for verifying deletion will appear: Choose "YES", and then press the ►/II button.

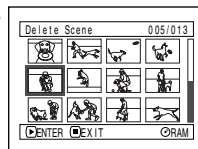


Choose "NO" to cancel deletion.

After Yes or No setting, the "Delete Scene" screen will be restored.

Repeat steps 5 and 6 to delete other scenes.

7 Press the ■ button to quit.

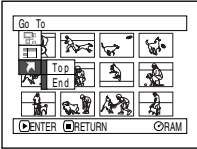
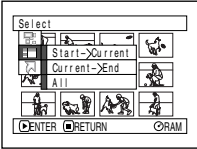
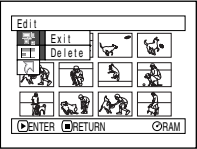


Note:

- If you point the cursor at the scene to be deleted on "All Programs" screen, and then press the DELETE button on remote control, the screen in step 5 will appear.
- To delete an unwanted part of a scene on DVD-RAM disc, divide the scene first, and then delete the unnecessary part (See page 102).
- If you delete all data on disc or card, initialising the disc or card will be recommended (See page 121).
- If even one play list has been created, message "Same scenes on PlayList will be deleted. Delete scenes?" will appear before deleting scene(s). This message will appear even if the scene(s) to be deleted is not used in the corresponding play list. In this case, choose "YES" and then press the ►/II button.
- If the time of deleted scenes (stills) is quite short, the remaining free space of disc may not increase in the disc or card remaining indicator.
- The locked scenes on card cannot be deleted (See page 104).

●Editing using submenu

Press the MENU button before pressing the ►/|| button in step 5 (See page 96): The submenu will appear.



- Edit — Exit..... To restore the Disc Navigation screen
- Delete To delete selected scenes
- Select — Start → Current..... To select scenes from the start to the one that the cursor is on at the moment
- Current → End To select scenes from the scene the cursor is on to the end
- All..... To select all scenes
- Go To — Top To move the cursor to the first scene
- End To move the cursor to the last scene

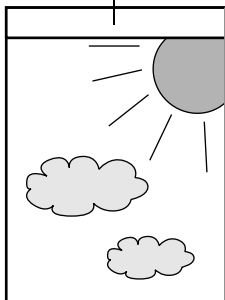
Pressing the ■ button will restore the screen in step 5.

Note:
Although the submenu screen will appear for each setting, some menu items may not appear, depending on the setting.

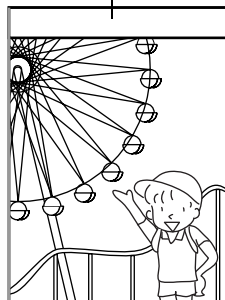
Changing Images for Thumbnails (Edit - Thumbnail)

Normally, the first image of the recorded scene is displayed as a thumbnail: You can choose another image of the scene for thumbnail. If you set a vivid image to thumbnail, you can know what you recorded from a glance at the Disc Navigation screen.

Original thumbnail



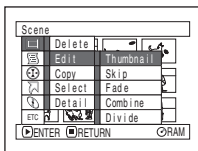
You can use this image as thumbnail.



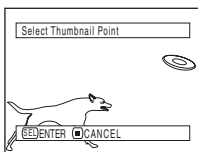
...

...

- 1 Press the DISC NAVIGATION button.
- 2 Select the thumbnail of the scene to be changed.
- 3 Press the MENU button.
- 4 Choose "Scene", "Edit", "Thumbnail", and then press the ►/II button.



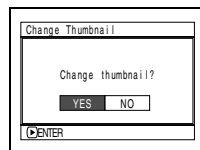
- 5 The "Change Thumbnail" screen will appear: If you are sure you want to change the thumbnail of the selected scene, press the ►/II button: The selected scene will be played back.



If you want to change the scene whose thumbnail is to be changed, you can change it on this screen.

- 6 When the image you want to use as the thumbnail of the scene appears, press the SELECT button.

- 7 The screen for verifying switching of thumbnail will appear: Choose "YES", and then press the ►/II button.



Choose "NO" to cancel switching of thumbnail. After Yes or No setting, the "Change Thumbnail" screen will be restored. Repeat steps 5-7 to change the other scenes.

- 8 Press the ■ button to quit.

Note:

- If you press the MENU button before pressing the ►/II button in step 5, the submenu screen will appear (See page 97).
- A thumbnail of still cannot be changed.
- Since the scene to which skipping is set cannot be played back, you will not be able to change its thumbnail: Release the skip setting of the scene to change the thumbnail.

Playing Back by Skipping Scenes (Edit - Skip)

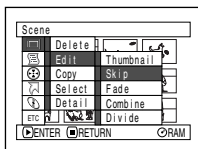
You can specify “Skip” for scenes you do not want to play back: The selected scenes will be skipped.

1 Press the DISC NAVIGATION button.

2 Select the scene to be skipped.

3 Press the MENU button.

4 Choose “Scene”, “Edit”, “Skip”, and then press the ►/II button.




5 The “Set Skip” screen will appear: If you are sure you want to skip the selected scene, press the ►/II button.

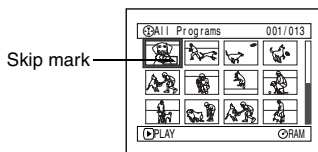
If you want to change the scene to be skipped, you can change it on this screen.

After skip setting, the “Set Skip” screen will be restored.

Repeat step 5 to set skipping of other scenes.

6 Press the ■ button to quit.

A skip mark “” will appear in the thumbnail of any scene for which skipping has been set.



● Releasing Skip

Select the scene set to be skipped, and perform the same procedure as setting skip: The skip mark will disappear and skipping of the scene will be released.

Note:

- Multiple scenes can be selected for skipping (P.93).
- If you press the MENU button before pressing the ►/II button in step 5, the submenu screen will appear (P.97)

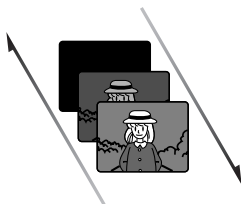
Arranging Order of Scenes (Edit - Move)

You can arrange scenes within a play list by moving them to desired positions. Create a play list first, and then arrange the scenes [“Creating New Play List (Create)”, P.111].

Adding Special Effects (Edit - Fade)

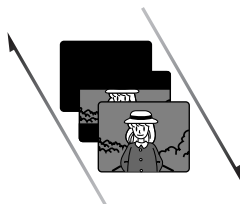
You can add fading to the beginning and/or end of scene.
There are three types of special effects:

Fade Out



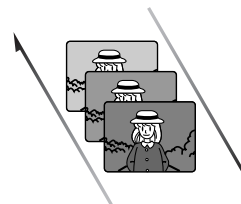
Fade In

Fade Out



Fade In

Fade Out



Fade In

Black:

Fades in from black screen
Fades out to black screen

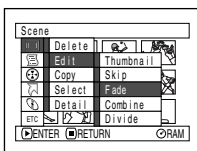
Wipe:

Fades in from black screen to
vertical direction of screen
Fades out from vertical
direction of screen to black
screen

B/W:

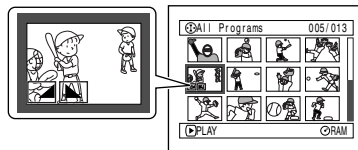
Fades in from Black and White
screen to colour screen
Fades out from colour screen
to Black and White screen

- 1 Press the DISC NAVIGATION button.
- 2 Select the scene for adding special effects.
- 3 Press the MENU button.
- 4 Choose, "Scene", "Edit", "Fade" and then press the ►/|| button.
- 5 The "Fade" screen will appear: If you are sure you want to add the fade effect to the scene, press the ►/|| button.



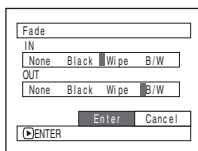
- 7 Press the ■ button to quit.

The "▲" and/or "▼" mark(s) will appear in the scenes for which special effects have been set.



If you want to change the scene to which fade is added, you can change it on this screen.

- 6 Select the special effects for "IN" and/or "OUT", choose "Enter", and then press the ►/|| button.



To cancel setting, choose "Cancel".

After setting, the "Fade" screen will be restored.
Repeat steps 5 and 6 to add fade to other scenes.

Combining Multiple Scenes (Edit - Combine)

You can combine multiple scenes into one.

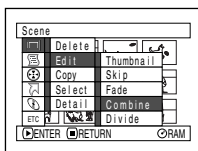
If you have recorded numerous short scenes, combining them will be facilitated by the use of Disc Navigation.

Be sure to select consecutive multiple scenes. Combining scenes is possible only when “Category: All” is specified. Stills cannot be combined.

- 1 Press the DISC NAVIGATION button.
- 2 Select the consecutive multiple scenes to be combined.

- 3 Press the MENU button.

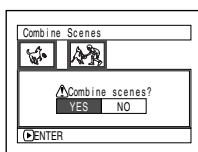
- 4 Choose, “Scene”, “Edit”, “Combine” and then press the ►/|| button.



- 5 The “Combine Scenes” screen will appear: If you are sure you want to combine the selected scenes, press the ►/|| button.

If you want to change the scenes to be combined, you can change them on this screen.

- 6 The screen for verifying combination will appear: Choose “YES”, and then press the ►/|| button.



The two images appearing on the verification screen are those of the first and last scenes to be combined.

Choose “NO” to cancel combination.

After Yes or No setting, the “Combine Scenes” screen will be restored.

The thumbnail of the first scene will appear in the combined scene.

Repeat steps 5 and 6 to combine other scenes.

- 7 Press the ■ button to quit.

Note:

Scenes in different programs (different recording dates) cannot be combined: Create a play list first, and then combine such scenes on the play list.

Dividing Movies (Edit - Divide)

You can divide a scene into two parts.

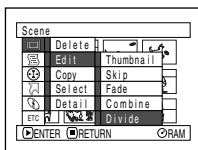
To delete unnecessary portion of scene, first divide the scene, and then delete the unnecessary portion.

1 Press the DISC NAVIGATION button.

2 Select the scene to be divided.

3 Press the MENU button.

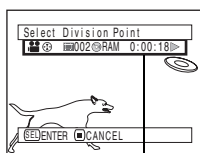
4 Choose, "Scene", "Edit", "Divide" and then press the ►/II button.



5 The "Divide Scene" screen will appear: If you are sure you want to divide the selected scene, press the ►/II button: The selected scene will be played back.

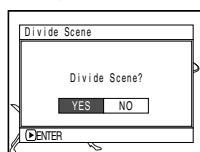
If you want to change the scene to be divided, you can change it on this screen.
The selected scene will be played back.

6 When you reach the point where you want to divide the scene, press the SELECT button.



Status bar of scene being played back

7 The screen for verifying division will appear: Choose "YES", and then press the ►/II button.



Choose "NO" to cancel division.

After division, the "Divide Scene" screen will be restored.

Repeat steps 5-7 to divide another scene.

8 Press the ■ button to quit.

Note:

- If you press the MENU button before pressing the ►/II button in step 5, the submenu screen will appear (P.97).
- The status bar of scene being played back can be switched off or on by pressing the DISPLAY button.
- Search and frame advance are useful when designating division points.
- If a special effect has been added to the original scene, the "IN" effect will be added to the first half of scene, and the "OUT" effect, to the latter half.
- The division point may drift before or after the designated point by approximately 0.5 seconds.
- Since a scene with a skip set cannot be played back, no division point can be specified: Release the skip for the scene before dividing it.
- If the division point is at a still, a message will appear, but no division will be made.
- If the division point is at the start or end of a scene, a message will appear, but no division will be made.
- A movie scene whose recording time is 0.5 seconds or less cannot be divided.
- If free space available on disc is insufficient, division will not be possible: Delete unnecessary scenes.
- Pressing the ■ button on the screen for verification will restore the thumbnail display screen.

Copying Stills on DVD-RAM Disc to Card (Copy)

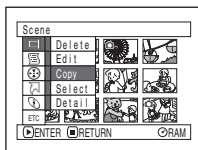
1 Set the power switch to “ ” or “ ”.

2 Press the DISC NAVIGATION button.

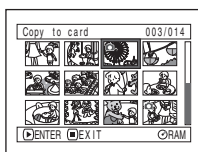
3 Select the still to be copied.

4 Press the MENU button.

5 Choose “Copy” on the “Scene” menu screen, and then press the **▶/II** button.

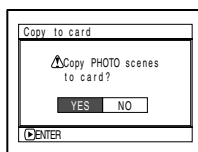


6 The “Copy to card” screen will appear: If you are sure you want to copy the selected still, press the **▶/II** button.



If you want to change the still to be copied, you can change it on this screen.

7 The screen for verifying copy will appear: Choose “YES”, and then press the **▶/II** button.



Choose “NO” to cancel copy.

After Yes or No setting, the “Copy to card” screen will be restored.

Repeat steps 6 and 7 to copy other stills to card.


8 Press the **■** button to quit.


Note:

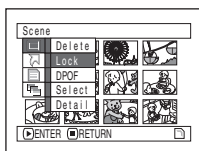
- No movie can be copied.
- When you copy stills recorded on DVD-RAM disc to card, recording quality will automatically be set to “FINE”.
- If you press the MENU button before pressing the **▶/II** button in step 6, the submenu screen will appear (P.97).
- See “Category” (P.124) to check the stills recorded on DVD-RAM disc.
- You can also select multiple scenes (P.93).
- Even if all scenes, including movies, are selected to be copied, only stills will be copied.
- Data on card cannot be copied to disc.
- Stills recorded on a device other than this DVD Video Camera may not be copied normally.


Locking Scenes on Card (LOCK)

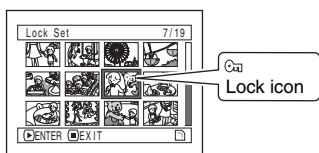
You can lock each photo recorded on card so that it will not be deleted or edited by mistake.

- 1 Set the power switch to “”.
- 2 Press the DISC NAVIGATION button.
- 3 Select the scene to be locked.
- 4 Press the MENU button.

- 5 Choose “Lock” on the “Scene” menu screen, and then press the /II button.



- 6 The “Lock Set” screen will appear: If you are sure you want to lock the selected scene, press the /II button.



If you want to change the scene to be locked, you can change it on this screen.

After setting, the “Lock Set” screen will be restored.


Repeat step 6 to lock another scene.

- 7 Press the  button to quit.

● To unlock the scene:

Select the locked scene, and then use the same procedure as above to unlock the scene: The lock mark will disappear and locking will be released.

Note:

- If you press the MENU button before pressing the /II button in step 6, the submenu screen will appear (P.97).
- You can also select multiple scenes (P.93).
- When initialising the card, the locked scenes will also be deleted.

Designating Scenes to Be Printed (DPOF)

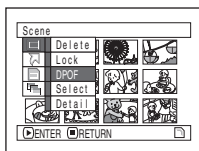
You can use DPOF to set print information, including selection of the scenes to be printed, so that you will be able to use it on a system conforming to DPOF.

Note:

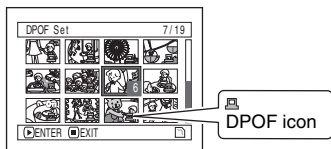
DPOF stands for digital print order format. DPOF is used to ask a print lab to print recorded stills.

- 1 Set the power switch to "SD".
- 2 Press the DISC NAVIGATION button.
- 3 Select the scene to which DPOF is to be set.
- 4 Press the MENU button.

- 5 Choose "DPOF" on the "Scene" menu screen, and then press the **►/II** button.

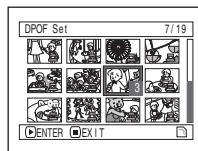


- 6 The "DPOF Set" screen will appear: If you are sure you want to set DPOF to the scene, press the **►/II** button.



If you want to change the scene to which DPOF is set, you can change it on this screen.

- 7 Use joystick to specify the number of prints, and then press the **►/II** button:



Tilt it up or to right: To increase the number one by one.

Tilt it down or to left: To decrease the number one by one.

After setting, the "DPOF Set" screen will be restored.

Repeat steps 6 and 7 to set DPOF to another still.

- 8 Press the **■** button to quit.

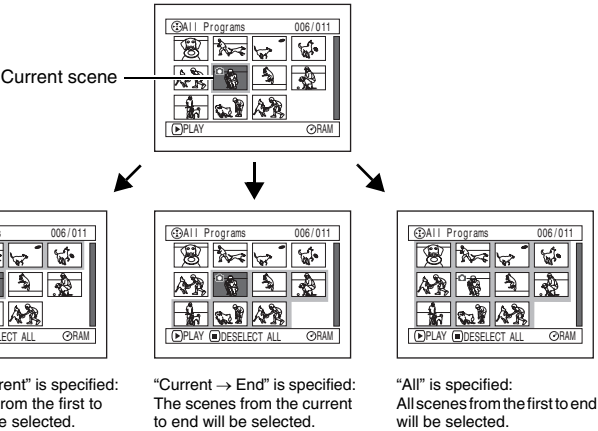
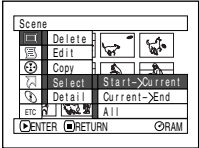
Note:

- If you press the MENU button before pressing the **►/II** button in step 6, the submenu screen will appear (P.97).
- You can also select multiple photos (P.93).
- If you specify the number after selecting multiple stills, the same specified number will be set to all those stills.
- Up to 99 prints can be set for one scene. The maximum number of settable prints on one card is 999.
- This DVD Video Camera may not recognise DPOF that has been set on another device: Always set the DPOF on this DVD Video Camera.

Selecting Scenes Using Menu Screen (Select)

Using the Disc Navigation menu screen, you can simultaneously select consecutive scenes. This function is useful when there are numerous scenes.


- 1 Press the DISC NAVIGATION button.
- 2 Press the MENU button.
- 3 Choose “Select” on the “Scene” menu screen.
- 4 Choose “Start → Current”, “Current → End” or “All” and then press the ►/II button.



●Deselecting selected scenes

Deselecting scenes one by one:
While you are displaying the “All Programs” screen on which scenes have been selected, choose the scene to be deselected and then press the SELECT button.

Note:
Up to 999 scenes can be selected.

Deselecting all the selected scenes at once:
While you are displaying the “All Programs” screen on which scenes have been selected, press the  button.

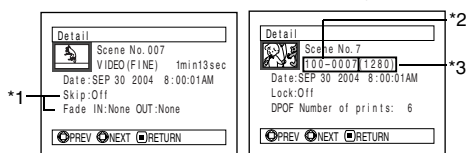
Displaying Information Using Menu Screen (Detail)

You can display various information for a scene: the recording mode, recording date/time and length, special effects and movie quality mode.

- 1 Press the DISC NAVIGATION button.
- 2 Select the scene whose information you wish to know.
- 3 Press the MENU button.
- 4 Choose "Scene", "Detail", and then press the ►/|| button.

The detailed information on the scene will appear.

(When using disc)



*1 Not displayed with DVD-R disc.

*2 May not appear if the loaded card does not comply with DCF.

*3 Number of pixels on still in horizontal direction: This may not appear with a JPEG file does not conform to this DVD Video Camera.

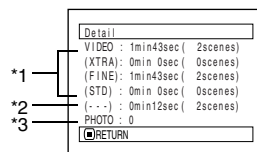
Note:

Tilting the joystick to right will display information on the following scene; tilting the joystick to left will display information on the preceding scene.

- 5 Press the ■ button to quit.

If you have selected multiple scenes, the information shown below will appear. Pressing the ■ button will restore the thumbnail display screen.

(When using disc)

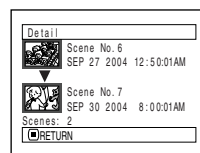


*1 With DVD-R disc, the quality mode (FINE or STD) selected first will appear.

*2 Number of scenes whose quality mode is unknown: This will appear when the disc has a scene recorded on a device other than this DVD Video Camera, only if the disc has a scene whose mode is unknown. Also, this will not appear when a DVD-R disc is used.

*3 This will not appear with DVD-R disc, since no still image can be recorded on it.

(When using card)



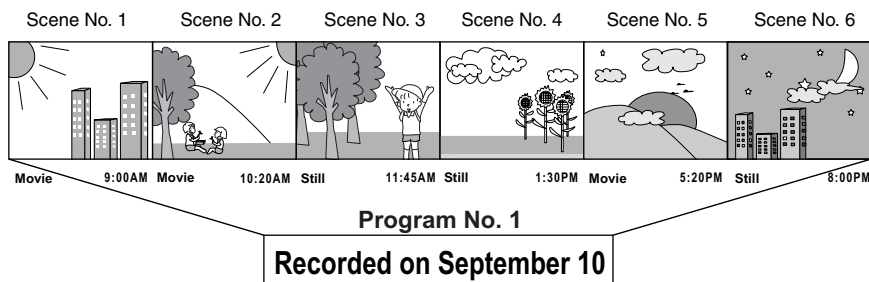
Note:

- If multiple scenes have been selected, the total recording time of the selected scenes (total number in case of stills) will appear.
- If a DVD-R disc recorded on a device other than this DVD Video Camera is inserted (already finalised), no scene information will appear.

Programme

What is “programme”?

Programme refers to an assembly of scenes recorded on the same date regardless of whether they are movie or still.



RAM R

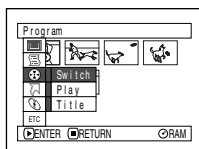
Switching to Thumbnail Display of Specific Date (Switch)

Since the scenes recorded on this video camera are collected as “programmes” for each recording date, selecting a programme will allow you to display only the scenes on a specific date.

1 Press the DISC NAVIGATION button.

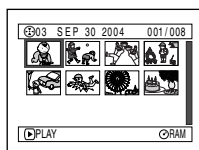
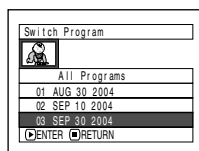
2 Press the MENU button.

3 Choose “Switch” on the “Program” menu screen, and then press the ►/II button.



4 Select the programme to be displayed, and then press the ►/II button.

The Disc Navigation screen of the selected programme will appear.



Note:

- Pressing the ■ button on the “Switch Program” screen will restore the Disc Navigation screen.
- The dates displayed on the programme select screen will be in the Date Mode used when the first scenes of programmes were recorded, and the date displays D/M/Y, M/D/Y and Y/M/D may be mixed.

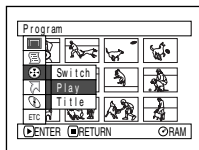
Playing Back Programme (Play)

You can play back only the selected programme.

1 Press the DISC NAVIGATION button.

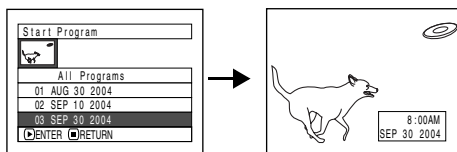
2 Press then the MENU button.

3 Choose "Play" on the "Program" menu screen, and then press the ►/II button.



4 Select the programme to be played back, and then press the ►/II button.

Playback will start from the first scene of the selected programme.



Note:

If "Repeat Play: On" is specified, the selected programme will be repeatedly played back.

RAM

Changing Title of Programme (Title)

The recording date/time has initially been attached to any programme.

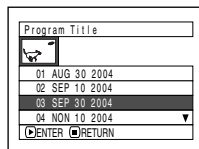
You can change the recording date/time to any desired title.

1 Press the DISC NAVIGATION button.

2 Press the MENU button.

3 Choose "Title" on the "Program" menu screen, and then press the ►/II button.

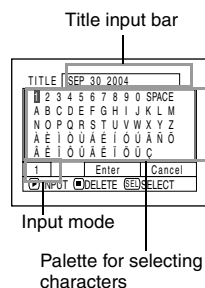
4 Select the programme whose title you want to change, and then press the ►/II button.



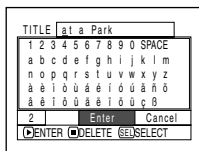
The screen for setting a title will appear.

5 Select a letter and then press the ►/II button: The selected letter will be entered.

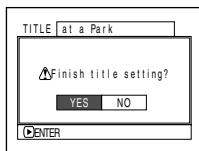
Repeat this procedure to create a title.



- 6 After entering the title, choose "Enter" and then press the ►/II button.



- 7 The screen for verifying the change in title will appear: Choose "YES", and then press the ►/II button.



Choose "NO" to cancel changing of the title.

Note:

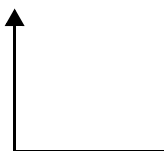
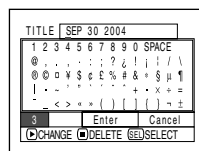
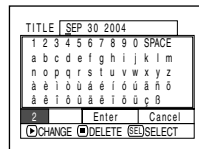
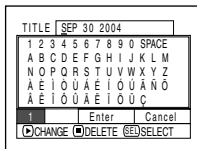
- If you wish to delete the letter for title, press the ■ button once: The input letter will be deleted. Holding down the ■ button will delete all letters in the TITLE column. You can also use the DELETE button on remote control to delete any input letters.
- Pressing the SELECT button on the title setting screen (in step 5) will change the cursor position from the title input bar to character select palette, input mode number, and then to "Cancel".
- To cancel the setting of title, choose "NO" on the screen for verifying the entered title: The screen for verifying cancellation of title setting will appear. To cancel title setting, choose "YES".
- If you press the ■ button on the screen for verifying change in title, the title setting screen will be restored.
- Double byte characters set on other devices may be displayed blank on this DVD Video Camera.

● Characters available for entering title

You can use the joystick to select characters from the "capital letter", "small letter" and "symbol" input modes.

With step 5, select the input mode and then press the ►/II button, or press the DISPLAY button.

Input mode



Play List

What is “play list”?

You can create a play list on this DVD Video Camera by gathering your favourites from the recorded scenes.

Since the play list is not created by copying data, you will consume little of the disc capacity by making a play list. On the other hand, deleting scenes on play list will not increase the remaining disc capacity for recording.

Example:

Programme 1 (recorded on September 27, 2004)



Programme 2 (recorded on September 30, 2004)



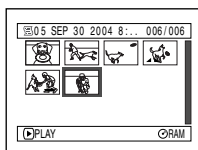
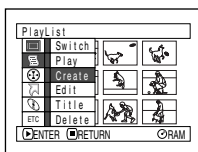
Play list 1 created

Play lists of up to No. 99 can be created and 999 scenes can be included in play lists of No. 1 to No. 99.

Creating New Play List (Create)

Here we create a play list.

- 1** Press the DISC NAVIGATION button.
- 2** Select the scenes to be programmed in a play list.
- 3** Press the MENU button.
- 4** Choose “Create” on the “PlayList” menu screen, and then press the ►/II button.
- 5** The scene select screen will appear: If the selected scenes on the play list are the ones you want, press the ►/II button.



If you want to change the scenes with which you want to create a play list, you can change them on this screen.

With the created play list, you can also add scenes recorded on another day or delete unnecessary scenes afterwards.

- 6** When creation of a play list is complete, the Disc Navigation screen will appear.

Note:

- You can also select multiple scenes (P.93).
- If the added scene had skip or fade setting, that information will also be added to the play list.
- The date/time when a play list was created will appear as the title for the play list.
- If free space available on disc is insufficient, creation of new play list may not be possible: Delete unnecessary scenes.
- Only the data on scenes is recorded on play list: If you create or delete play lists, the original scenes in programmes will not be erased. Editing scenes on play list will not affect the scenes in programmes.
- If you press the MENU button before pressing ►/II in step 5, the submenu will appear (see page 97).

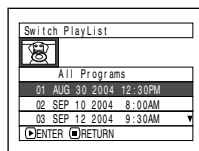
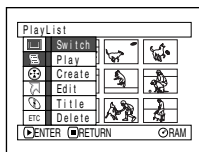
Switching to Display of Each Play List (Switch)

Select the desired one of multiple play lists: The Disc Navigation screen of the selected play list will appear.

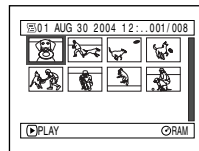
1 Press the DISC NAVIGATION button.

2 Press the MENU button.

3 Choose “Switch” on the “PlayList” menu screen, and then press the ►/II button.



4 Use the “Switch Playlist” screen to select the play list you wish to display, and then press the ►/II button.



The Disc Navigation screen of the selected play list will be displayed.

Note:

To display the Disc Navigation screen showing all programmes (all recorded scenes), choose “All Programs” on the “Switch PlayList” screen.

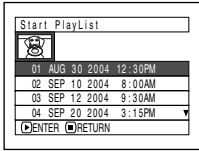
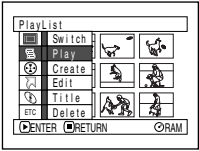
● Editing on play list

When making settings on play list, such as changing title, adding fade, setting skip, etc., use the same procedure for setting on programme or scenes. Perform these settings, referring to the following reference pages:

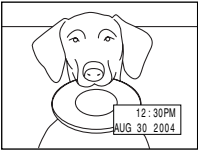
Changing thumbnail,	P.98
Setting skip,	P.99
Adding fade,	P.100
Combining scenes,	P.101
Dividing a scene,	P.102
Arranging order of scenes,	P.117
Changing title,	P.118

Playing Back a Play List (Play)

- 1 Press the DISC NAVIGATION button.
- 2 Press the MENU button.
- 3 Choose “Play” on the “PlayList” menu screen, and then press the ►/|| button.



- 4 Use the “Start PlayList” screen to select the play list to be played back, and then press the ►/|| button.



The selected play list will be played back from the first scene. To cancel playback midway, press the ■ button: The Disc navigation screen of the play list being played back will appear.

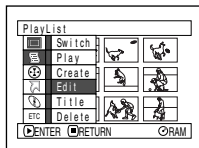
Note:
If “Repeat Play: On” is specified, the play list will be repeatedly played back (See page 124).

Adding Scenes to Play List (Editing Play List)

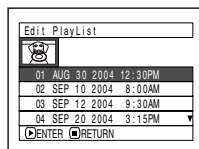
1 Press the DISC NAVIGATION button.

2 Press the MENU button.

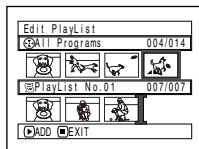
3 Choose "Edit" on the "PlayList" menu screen, and then press the ►/II button.



4 Use the play list select screen to select the play list to which you wish to add scenes, and then press the ►/II button.

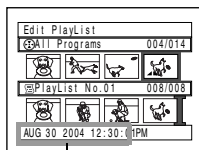


The scenes of the programme that was displayed in step 1 will appear in the upper row, and the scenes of selected play list will appear in the lower row.



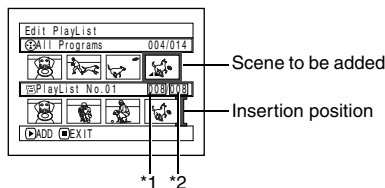
Note:

If the DISPLAY button is pressed when the thumbnails are displayed, the recording date/time of the selected scene will appear across the bottom of screen. Press DISPLAY again to restore the previous screen.



Recording date/time

5 Tilt the joystick down to move the cursor to the lower row, and tilt it to left or right to select the point where the scene is to be inserted.



*1: Number of scene before insertion position cursor
*2: Number of all scenes on play list

6 Tilt the joystick up to move the cursor to the upper row, and tilt it to left or right to point the cursor to the scene to be added.

7 Press the ►/II button to copy the scene.

After adding scenes is completed, the edited play list will appear.
Repeat steps 5 – 7 to add other scenes.

8 Press the ■ button: The screen for verifying exit will appear.

Note:

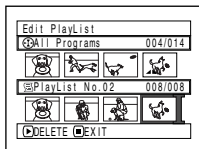
- The cursor shows the position where the scene is to be added.
- You can also select multiple scenes (P.93).
- Pressing ■ in the middle of adding scenes will display the screen for verifying an exit from "Edit Playlist". Choose "YES" to exit the edition of play list. Choosing "NO" will restore the "Edit Playlist" screen.
- If you press the MENU button in step 5 or 6, the submenu screen for editing play list will appear. You can also use this submenu to add scenes (See page 97).

Deleting Scenes from Play List (Editing Play List)

1 Press the DISC NAVIGATION button.

2 Display the editing screen of the play list to be edited.

Perform steps 2 – 4 on page 114.

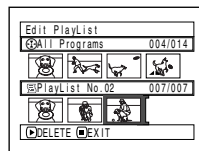


3 Move the cursor to the play list in lower row, and place the cursor on the scene to be deleted.

4 Press the ►/|| button.

Repeat steps 3 and 4 to delete other scenes.

5 Press the ■ button: The screen for verifying exit will appear.



Note:

- You can also select multiple scenes (P.93).
- Place the cursor on scene to be deleted, and then press the DELETE button on remote control: You can also delete the scene on the play list.

Adding Scenes Using Submenu for Editing (Editing Play List)

You can use the menu screen to add scenes to a play list.

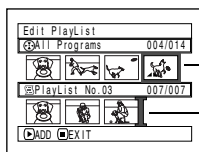
1 Press the DISC NAVIGATION button.

2 Display the editing screen of the play list to be edited.

Perform steps 2 – 4 on page 114.

3 From the play list in lower row, select the position where you wish to insert a scene.

4 Select the scenes to be added from the upper row.



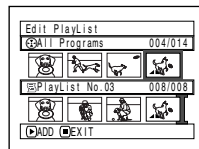
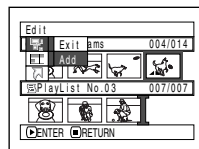
Scene to be added
Insertion position

5 Press the MENU button.

6 Choose "Add", and then press the ►/|| button.

Repeat steps 3 – 6 to add other scenes.

7 Press the ■ button to quit.



Note:

- The selected scenes will be added in the insertion position.
- You can also select multiple scenes (P.93).

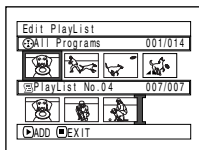
Deleting Scenes Using Submenu for Editing (Editing Play List)

You can delete scenes from play list on the editing screen.

1 Press the DISC NAVIGATION button.

2 Display the editing screen of the play list to be edited.

Perform steps 2 – 4 on page 114.

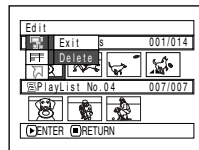


3 Move the cursor to the play list in lower row.

4 Select the scene to be deleted, and then press the MENU button.

5 Choose “Delete” on the “Edit” menu screen, and then press the ►/|| button.

Repeat steps 3 – 5: other scenes can be deleted.



6 Press the ■ button: The screen for verifying exit will appear.

Note:

- If all scenes on play list are deleted, the play list itself will also be deleted.
- You can also select multiple scenes (P.93).

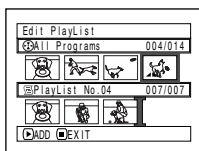
Selecting Scenes Using Submenu for Editing (Editing Play List)

You can specify the range of scenes when adding or deleting consecutive multiple scenes to/from play list. This “Select” menu item is useful when selecting consecutive multiple scenes in items for adding or deleting scenes using menu on page 106.

1 Press the DISC NAVIGATION button.

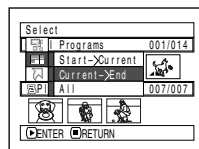
2 Display the editing screen of the play list to be edited.

Perform steps 2 – 4 on page 114.



3 Specify the first scene of those you wish to select, and then press the MENU button.

4 Choose “Start → Current”, “Current → End”, “All” on the “Select” menu screen, and then press the ►/|| button.



Note:

See page 106 for the status of scenes to be selected.

5 Press the ■ button: The screen for verifying exit will appear.

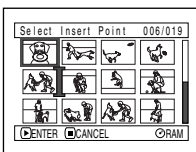
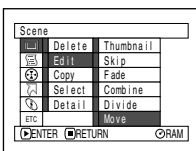
Arranging Order of Scenes (Move)

You can move scenes only when “Category: All” is specified.

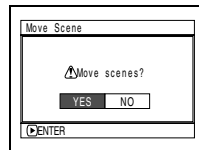
- 1 Press the DISC NAVIGATION button.
- 2 Press the MENU button.
- 3 Choose “Switch” on the “PlayList” menu screen, and then press the ►/|| button.
- 4 Select the scene to be moved, and then press the ►/|| button.
- 5 Press the MENU button.
- 6 Choose “Scene”, “Edit”, “Move”, and then press the ►/|| button.
- 7 The “Move Scene” screen will appear: If you are sure you want to move the scene, press the ►/|| button.

If you want to change the scene to be moved, you can change it on this screen.

- 8 Move the “I” mark to the position where you wish to move the scene, and then press the ►/|| button.



- 9 The screen for verifying move will appear: Choose “YES”, and then press the ►/|| button.



Choose “NO” to cancel move.

After Yes or No setting, the scene select screen will be restored.

Repeat steps 7 – 9 to move another scene.

- 10 Press the ■ button to quit.

Note:

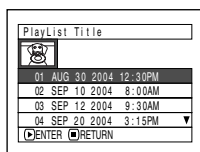
- If you press the MENU button before pressing the ►/|| button in step 7, the submenu screen will appear.
- You can also move multiple scenes (P.93).
- Stills can also be moved.
- Only scenes on play list can be moved.

Changing Title of Play List (Title)

The play lists have serial numbers in the order you have created them, along with the created dates/times: You can change this title at any time.

- 1 Press the DISC NAVIGATION button.
- 2 Press the MENU button.
- 3 Choose "Title" on the "PlayList" menu screen, and then press the ►/II button.
- 4 Use the "PlayList Title" screen to select the play list whose title you wish to change, and then press the ►/II button.

See "Changing Title of Programme (Title)" on page 109 for how to enter a title.

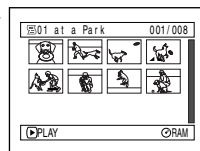


- 5 The screen for verifying exit will appear: Choose "YES" and then press the ►/II button.



- 6 Press the ■ button to quit.

After changing the title, the Disc Navigation screen on the play list whose title has been changed will appear.

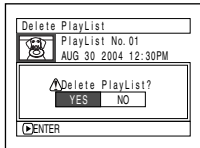
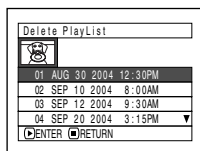


Note:

The registered title can be changed at any time using the same procedure.

Deleting Play List (Delete)

- 1 Press the DISC NAVIGATION button.
- 2 Press the MENU button.
- 3 Choose "Delete" on the "PlayList" menu screen, and then press the ►/II button.
- 4 Use the "Delete PlayList" screen to select the play list you wish to delete, and then press the ►/II button.



- 5 The screen for verifying deletion will appear: Choose "YES", and then press the ►/II button.

Choose "NO" to cancel deletion. After Yes or No setting, the Disc Navigation screen of all programmes will be restored.

Note:

Even if you delete a play list, the original scenes stored on disc will not be deleted.

Go To

From the Disc Navigation screen, you can jump to the first scene or last scene.

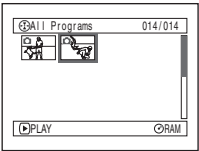
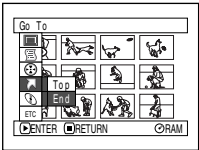
Top (End)

- 1

Press the DISC NAVIGATION button.
- 2

Press the MENU button.
- 3

Choose "Top" or "End" on the "Go To" menu screen, and then press the ►/II button.



(When "End" is specified)

Disc or Card Management

RAM R CARD

Verifying Remaining Free Space on Disc or Card (Capacity)

You can find out how long you will be able to record on one side of disc or on card.

1 Press the DISC NAVIGATION button.

2 Press the MENU button.

3 Choose "Capacity" on the "Disc" or "Card" menu screen, and then press the ►/II button.

4 Press the ■ button to quit.

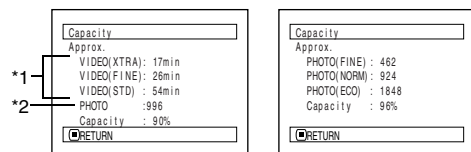
The Disc Navigation screen will be restored.

Note:

With a write-protected disc or locked card, the remaining space will always be displayed as "0".

(When using disc)

(When using card)



*1 With DVD-R disc: The quality mode first used for recording with disc will appear.

*2 With DVD-R disc: This will not be displayed.

RAM

Protecting Disc from Writing (Protect Disc)

You can protect a DVD-RAM disc in order to prevent recorded images from being erased or edited by mistake. Further recording will not be possible on protected disc until the protection is released.

1 Press the DISC NAVIGATION button.

2 Press the MENU button.

3 Choose "Protect Disc" on the "Disc" menu screen, and then press the ►/II button.

Note:

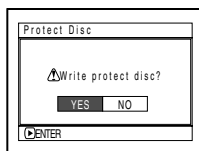
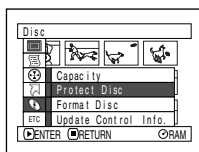
- To release disc protection, perform the same procedure as above: The screen for verifying the release of protection will appear. Choose "YES" to release the protection.

4 The screen for verifying protection will appear:

Choose "YES", and then press the ►/II button.

Choose "NO" to cancel protection.

After "YES" or "NO" setting, the Disc Navigation screen will be restored.



Disc protect icon

Initialising DVD-RAM Disc or Card (Format Disc/Format Card)

Before You Begin

- Take great care that power is not turned off during initialization: If the DVD Video Camera is turned off during initialization and the initialization is interrupted, incorrect initialization will result, and at worst, the data recorded on disc or card may be damaged.

- Press the DISC NAVIGATION button.
- Press the MENU button.
- Choose "Format Disc" or "Format Card" on the "Disc" or "Card" menu screen, and then press the ►/II button.

The screen for verifying "Format Disc" or "Format Card" will appear.

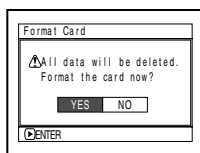
- Choose "YES", and then press the ►/II button.

Choose "NO" to cancel initialisation.

(When using
DVD-RAM disc)



(When using Card)



When initialising one side of the disc is complete, the DVD Video Camera will return to the recording pause status.

Note:

- Initialisation will delete all the recorded contents on disc or card: Be careful not to delete data by mistake.
- Be sure to use the AC adaptor/charger when initialising disc or card so that the DVD Video Camera is not turned off midway. If initialisation is interrupted by power off, the disc or card will not be initialised correctly, or it may be damaged.
- It may not be possible to initialise a disc with many scratches or dirt: Such a disc cannot be used.
- If you use a brand-new DVD-R disc, message "Disc is not formatted" will appear: initialise the disc, following the subsequent messages (See page 45).
- This DVD Video Camera may not recognise some discs or cards that have been initialised on PC or a device other than this DVD Video Camera.
- If you attempt to initialise a disc or card in this DVD Video Camera when it is connected to PC via USB cable, the disc or card may not be initialised and may be unusable on this DVD Video Camera.

Updating Control Information of DVD-RAM Disc (Update Control Info.)

Disc Navigation in this DVD Video Camera handles information on scenes, such as skip, fade, in a particular manner. If you use another device to edit a disc recorded on this DVD Video Camera, and then use the data again with Disc Navigation in this DVD Video Camera, the Disc Navigation may not appear normally. If this happens, use the Update Control Info function to update the data.

Before You Begin

- When using the AC adaptor to power the DVD Video Camera for updating control information, make sure that power is not turned off during updating: If the DVD Video Camera is turned off during updating and the updating is interrupted, the control information will not be updated correctly.

1 Press the DISC NAVIGATION button.

2 Press the MENU button.

3 Choose "Update Control Info." on the "Disc" menu screen, and then press the ►/II button.

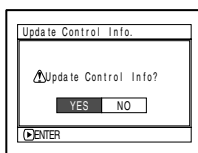
The screen for verifying "Update Control Info." will appear.

4 Choose "YES", and then press the ►/II button.

The message for proceeding will appear, and then the Disc Navigation menu screen will be restored.

A black screen may appear while the message for updating is displayed.

Choose "NO" to cancel updating.



5 Press the ■ button to quit.

Note:

- Be sure to use the AC adaptor/charger when updating the control information so that the DVD Video Camera is not turned off midway. If updating of control information is interrupted by power off, the control information will not be updated correctly.
- It may take time to update the control information if the disc has many recorded scenes.
- Pressing the ■ button on the screen for verification will restore the thumbnail display screen.

Finalising DVD-R Disc (Finalize Disc)

Before You Begin

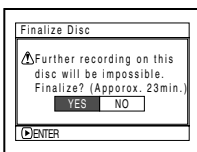
- Be sure to use the AC adaptor to power the DVD Video Camera when finalising a DVD-R disc. If the DVD Video Camera is turned off during finalisation and the finalisation is interrupted, incorrect finalisation will result, and at worst, the disc may be damaged.

If you want to play back a DVD-R disc recorded on this DVD Video Camera, using a device conforming to 8 cm DVD-R disc - such as a DVD player, etc. - you must finalise the disc on this DVD Video Camera. The finalised DVD-R disc can be played on a DVD player, as "DVD Video": The date of programme will appear on the menu screen of DVD player as a title.

- 1 Press the DISC NAVIGATION button.
- 2 Press the MENU button.
- 3 Choose "Finalize Disc" on the "Disc" menu screen, and then press the ►/II button.

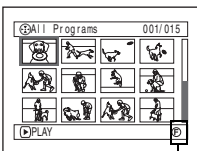
The disc will be finalised.

- 4 Choose "YES", and then press the ►/II button.



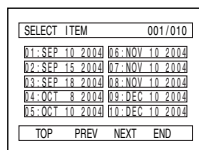
The message showing that the disc is being finalised will appear, and the disc will then be finalised.

© will appear on the Disc Navigation screen for a finalised disc.



Finalised DVD-R disc

- 5 When finalisation is complete, the Disc Navigation screen of all programmes will appear.



(Screen when viewed on DVD player)

Note:

- Do not finalise a disc recorded on this DVD Video Camera using any other device.
- No recording can be done on any DVD-R disc that has been finalised.
- If the disc in the DVD Video Camera has already been finalised, you cannot choose "Finalize Disc".
- Be sure to use the AC adaptor/charger when finalising disc. Finalisation cannot be executed using a battery. If finalisation is interrupted by power off, the disc will not be finalised correctly, or it may be damaged.
- The time required to finalise disc that appears on the "Finalize Disc" screen is only for reference.
- The shorter the recording time on disc, the longer it will take to finalise it.

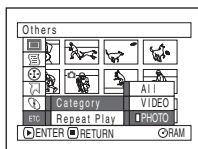
Displaying Movies or Stills Independently (Category)

Scenes recorded on this DVD Video Camera will be displayed in the order of recording regardless of whether they are movies or stills. You can use the Disc Navigation screen to switch this display to stills only or movies only.

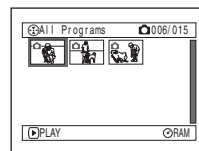
1 Press the DISC NAVIGATION button.

2 Press the MENU button.

3 Choose "Category" on the "Others" menu screen, and then press the ►/II button.



4 Specify the desired option for display, and then press the ►/II button.



(When "PHOTO" is specified)

All: To display all scenes, movies or stills, in the order of recording.

VIDEO: To display only movies in the order of recording.

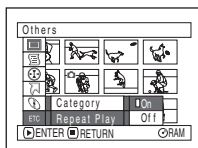
PHOTO: To display only photos in the order of recording.

Playing Back Scenes Repeatedly (Repeat Play)

1 Press the DISC NAVIGATION button.

2 Press the MENU button.

3 Choose "Repeat Play" on the "Others" menu screen, and then press the ►/II button.



4 Choose "On", and then press the ►/II button: Playback will start.

Choose "Off" to cancel Repeat Play setting.

● When Repeat Play is set:

If one scene has been specified: When playback of the last scene is finished, playback of all scenes will repeat from the first scene.

If the range for playback has been specified: Playback of the scenes in that range will repeat.

● To release Repeat Play

Use one of the following 3 methods to release:

- Choose "Off" in step 4 left.
- Turn the DVD Video Camera off once.
- Press the DISC EJECT button to remove the disc.

Note:

- Press the ■ button to terminate playback. However, the Repeat Play setting will not be cancelled.
- Still images can also be played back repeatedly.
- Repeat playback will not function when playback is instructed from the recording pause status.

Slide Show (Continuous Playback of Stills)

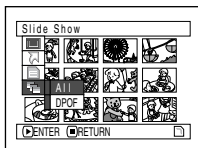
If you play back stills recorded on a card, the DVD Video Camera will enter the playback pause status after each still is played back.

Setting Slide Show allows you to continuously play back stills.

1 Press the DISC NAVIGATION button.

2 Press the MENU button.

3 Choose "Slide Show", "All" or "DPOF", and then press the ►/II button.



All: To play all stills recorded on card in slide show.

DPOF: To play only stills to which DPOF has been set in slide show.

Pressing the ►/II button will start slide show.

When playback is finished, the DVD Video Camera will enter the playback pause status at the final still.

Pressing the ■ button will restore the Disc Navigation screen.

Note:

- With slide show, playback starts from the first still on card.
- If you press the ■ button or turn the DVD Video Camera off, Slide Show will be canceled.

Installing Software

Before installing the DVD-RAM Driver on the CD-ROM provided with this DVD Video Camera, make sure that another DVD-RAM Driver has not already been installed in your PC.

If another DVD-RAM Driver has already installed in your PC, confirm the original DVD-RAM Driver.

If the packet writing software which supports the DVD-RAM disc is installed, it is necessary to un-install it, and then install the provided DVD-RAM Driver.

Note:

- This guide uses the screen of Windows® XP Home Edition/XP Professional to explain installing software: Use the same procedure for Windows® 98 Second Edition/Me/2000 Professional to install the software.
- We will not guarantee proper operation of this DVD Video Camera if you use a software other than the supplied one to read/write data on this DVD Video Camera even through the reading/writing finished without errors.

Compatible PC for use with DVD Video Camera: VDR-M50GC/M70GC

Personal computer	: IBM PC/AT compatible computer
OS	: Windows® 98 Second Edition/Me/2000 Professional/XP Home Edition/XP Professional
CPU	: Pentium® III 450 MHz or faster or Celeron® 633 MHz or faster (Pentium® 4 1.2 GHz or faster is recommended.) This unit may not be operated with the Pentium® compatible CPU not made by Intel® or AMD®. This unit also may not be operated with AMD-K6®-2/AMD-K6®-III.
Memory	: 128 MB or more
Free disk space	: 400 MB or more (not including the space for which images and stills are copied and edited)
Display resolution	: 1024 × 768 pixels or more
Display mode	: High Colour (16 bits), 65,536 colours or more (Display adaptor supported by DirectX® 8.1, video memory ; 4 MB or more.)
Sound card	: This unit requires sound card supported by DirectSound®.
USB	: This unit requires one USB port (USB 2.0 HIGH-SPEED port is recommended).

Operations will not be guaranteed under the following conditions

- The OS other than Windows® 98 Second Edition/Me/2000 Professional/XP Home Edition/XP Professional is installed.
- Operating computers installing Pentium® compatible CPU not made by Intel® or AMD®.
- Connecting this unit to your computer through a USB hub.
- Connecting this unit to your computer without the provided USB Cable and 5 pin Mini USB Cable of type B (Generally available).
- Connecting USB equipments other than the keyboard, the mouse and this unit to your computer.
- This unit does not support multiprocessors.
- In some cases, defects or limitations may occur depending on the combinations of other software or devices despite the fact that your computer satisfies the conditions described above.

Note:

Depending on the condition of your PC, it may a long time to install the software.

Contents on Provided CD-ROM

When inserting the provided CD-ROM into the PC, the "Setup Menu" screen will appear. You can install the included softwares.

If the "Setup Menu" screen will not appear, double-click the CD-ROM drive icon.



●USB Driver

(see page 129 for installation)

Install this driver when using the provided USB cable to connect this DVD Video Camera to PC.

- **Be sure you do not connect the USB cable before installing the USB Driver.**

●DVD-RAM Driver

(see page 131 for installation)

Install this driver if you wish to use JPEG stills recorded on DVD-RAM disc, on your PC.

●DVD-MovieAlbumSE 3

(see page 134 for installation)

You can use DVD-MovieAlbumSE to edit the images recorded on DVD-RAM disc and create a 3D title.

●MyDVD 4.0

(see page 136 for installation).

You can use MyDVD to create a DVD-Video disc from movies edited on DVD-MovieAlbumSE.

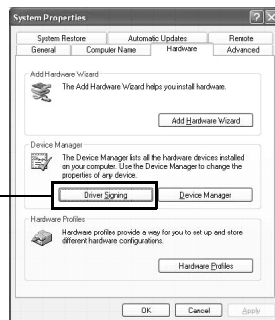
●Acrobat Reader

If Acrobat Reader is not installed in your PC, you will need to install it in order to open the on-line manuals (instruction manual files) for DVD-MovieAlbumSE and DVD-RAM Driver.

Note:

If any trouble has occurred while installing USB Driver or DVD-RAM Driver

(Using other than Windows® 98 Second Edition/Me)
When "Driver Signing" is selected in the "Hardware" tab in "System Properties", the installation procedure will not be completed. Select "Warn" and try again. To check and change the setting, open "Control Panel" from the Windows "Start" menu select, "System Properties", and then click the "Hardware" tab.



Click



Confirm

●DVD-MovieAlbumSE

You can read the instruction manual using either of the following procedure:

- After installing DVD-MovieAlbumSE, open “Programs” or “All Programs” from the Windows “Start” menu, choose “Panasonic” and “DVD-MovieAlbumSE”, and then open “On-line Manual”.

To read the above manual, you will need Adobe Acrobat Reader.

If Adobe Acrobat Reader has not been installed in your PC, you can install it from the “Setup Menu” screen. Click any language from the “Acrobat Reader” on the “Setup Menu” screen.

●MyDVD

- After installing MyDVD, open “Programs” or “All Programs” from the Windows “Start” menu, choose “Sonic” and “MyDVD”, and then open the electronic instruction manual in “Documentation” folder.

To read the above manual, a Web browser (Internet Explorer, Netscape Communicator, etc.) must be set up in your PC.

If you cannot open the electronic instruction manual of MyDVD, consult the manufacturer of your PC about the setup method for Web browser.

●DVD-RAM Driver

- After installing the DVD-RAM Driver, open “Programs” or “All Programs” from the Windows “Start” menu, choose “Panasonic DVD-RAM” and “DVD-RAM Driver”, and then open “Using DVD-RAM disc”.

No electronic instruction manual is provided with the USB Driver.

Note:

Although the above software programmes can be used on Windows® 98 Second Edition or later is needed to fully utilise all functions of DVD-MovieAlbumSE.

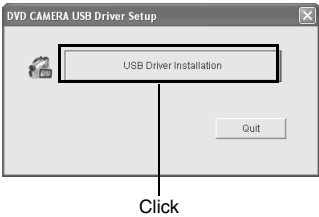
Installing USB Driver

Use the following procedure to install the USB Driver. The following instructions is the example for using the disc. It is necessary to repeat the step 6-9 procedure for using the card (Select “SD” in step 6).

- 1 Insert the provided CD-ROM into the PC, and Click “USB Driver” on the “Setup Menu” screen.

If the “Setup Menu” screen will not appear, double-click the CD-ROM drive icon.

- 2 The driver setup screen will appear: Click the “USB Driver Installation” button.



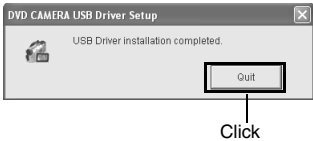
- 3 When using Windows® XP Home Edition/XP Professional, click “OK”: A message will appear, read the message, and then click “OK”.
When using OS other than Windows® XP Home Edition/XP Professional, skip this step.



- 4 When using Windows® XP Home Edition/XP Professional, click “Continue Anyway”.
When using OS other than Windows® XP Home Edition/XP Professional, skip this step.

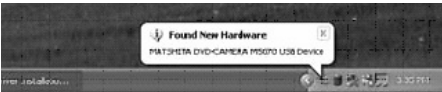


- 5 Click “Quit”.



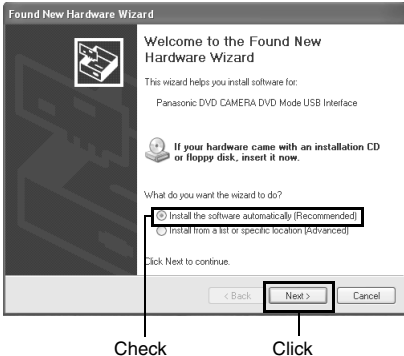
- 6 Set the power switch of DVD Video Camera to “CAM”, and then use the provided USB cable to connect the DVD Video Camera to the USB port of PC.

The “Found New Hardware” icon will appear.



When using OS other than Windows® XP Home Edition/XP Professional, installation of the USB Driver is completed. If any message will appear, follow instructions on screen.
When using Windows® XP Home Edition/XP Professional, proceed to the next step.

- 7 When the “Found New Hardware Wizard” screen appears, make sure that “Install the software automatically (Recommended)” has been checked, and then click “Next”.



- 8 A warning message will appear, but click “Continue Anyway”.



- 9 When installation of the USB Driver is finished, click “Finish”.



After the installation of the USB Driver is finished, make sure to restart your PC.

● Operation with DVD Video Camera connected

- The following operations are not possible when connected to PC:
 - Camera recording and playback using operation buttons on DVD Video Camera
 - Power off using the power switch on DVD Video Camera
- No image will appear on the LCD screen or viewfinder of DVD Video Camera when it is connected to PC:

Make sure of the connection with PC, using the ACCESS/PC indicator that shows access to DVD-RAM or DVD-R disc, or the beep sound that indicates the start and end of PC connection (When disc is not accessed, the ACCESS/PC indicator will not blink or light.).
- If still images are recorded on disc, use Windows Explorer to double-click the drive icon of DVD Video Camera (DVD_CAMERA), and then click the “\DCIM\100CDPFP” folder: The still JPEG files will appear.

Installing DVD-RAM Driver

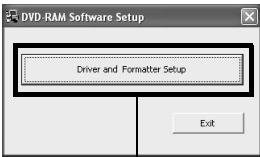
● Before Installing DVD-RAM Driver

If another DVD-RAM Driver has already installed in your PC, confirm the original DVD-RAM Driver.
If the packet writing software which supports the DVD-RAM disc is installed, it is necessary to un-install it, and then install the provided DVD-RAM Driver.

- 1 Insert the provided CD-ROM into the PC, and Click “DVD-RAM Driver” on the “Setup Menu” screen.

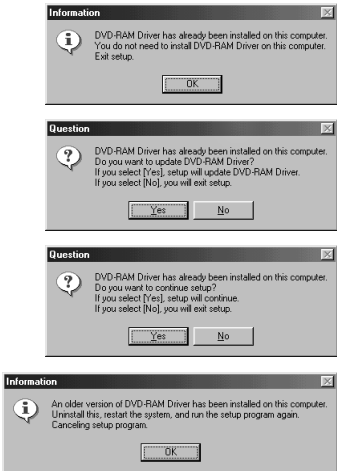
If the “Setup Menu” screen will not appear, double-click the CD-ROM drive icon.

- 2 The driver setup screen will appear: Click the “Driver and Formatter Setup” button.

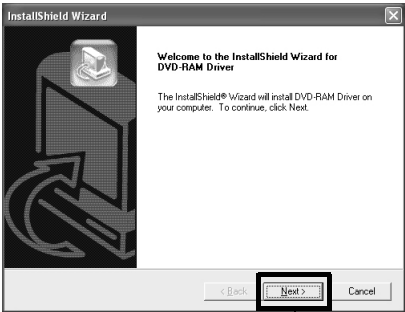


Click

One of the messages below may appear.
In this case, follow the message and continue the installation procedure.

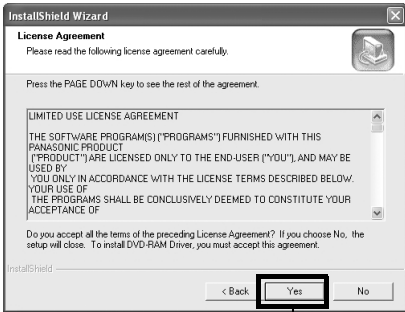


- 3 Click “Next”.



Click

- 4 Check the contents of License Agreement: If you accept it, click “Yes”. (The contents displayed on actual screen may differ from those in the figure.)

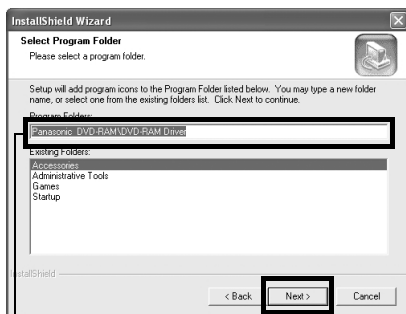


Click

- 5** Check the folder in which the DVD-RAM Driver will be installed, and then click “Next”.



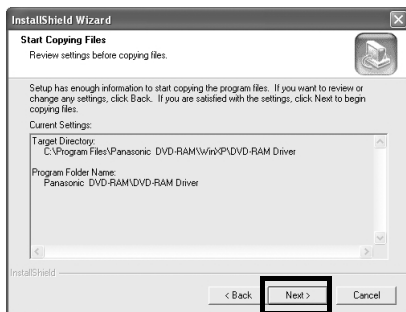
- 6** Check the programme folder to be installed, and then click “Next”.



Confirm

Click

- 7** Click “Next”.



Click

- 8** Installation will start. When installation is complete, some notes will appear: Check the contents, and then click “x” at the top right of window.

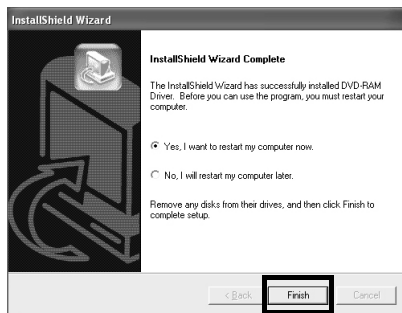
The contents displayed on actual screen may differ from those in the figure.



- 9** If your PC uses Windows® 98 Second Edition / Me / XP Home Edition / XP Professional, a message that prompts you to restart will appear: Follow the on-screen instructions and then click “Finish”.

- 10** Installing the DVD-RAM Driver is now complete.

If your PC uses Windows® 2000 Professional, proceed with step 10.



Click

- 11** If your PC uses Windows® 2000 Professional, a message announcing the start for detecting device will appear. The detection of device will start, after which it will take several minutes for PC to detect the device. When detecting the device is complete, a message that prompts you to restart will appear: Click “Yes” and then restart the PC.

Installing the DVD-RAM Driver is now complete.

● To confirm the installation of the USB Driver and the DVD-RAM Driver

You can check whether these installations are completed successfully. Use the following procedure.

- 1 Open "Control Panel" from the Windows "Start" menu, "System (System Properties)", and then click the "Hardware" tab.

When using Windows® XP Home Edition/XP Professional, "System" icon can be found in "Performance and Maintenance".

When using Windows® 98 Second Edition, there is not "Hardware" tab.

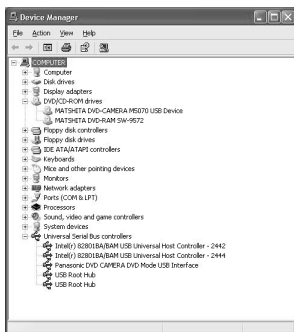
- 2 Click "Device Manager", verify the following items are listed on the screen.

When using disc:

- "MATSHITA DVD-CAMERA M5070 USB Device" under the "DVD/CD-ROM drives" *1
- *1: When using Windows® 98 Second Edition or Me, "MATSHITA DVD-CAMERA M5070" is listed under the "CDROM" and "Disk drives" respectively.
- "Panasonic DVD CAMERA DVD Mode USB Interface" under the "Universal Serial Bus controllers"

When using card:

- "MATSHITA DVD-CAMERA M5070 USB Device" under the "Disk drives"
- "Panasonic DVD CAMERA SD Mode USB Interface" under the "Universal Serial Bus controllers"



Example for using disc

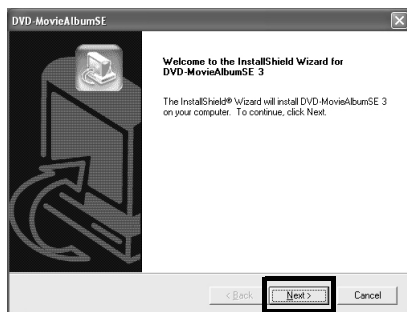
Installing DVD-MovieAlbumSE

Software “DVD-MovieAlbumSE” is used to edit movies that conform to DVD Video Recording format.

- 1 Insert the provided CD-ROM into the PC, and Click “DVD-MovieAlbumSE 3” on the “Setup Menu” screen.

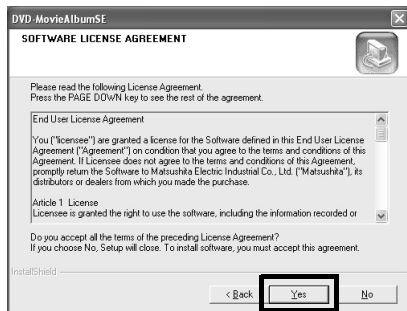
If the “Setup Menu” screen will not appear, double-click the CD-ROM drive icon.

- 2 The screen for installing “DVD-MovieAlbumSE” will appear: Click “Next”.



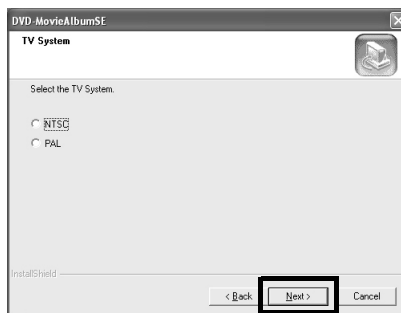
Click

- 3 Carefully read the Software License Agreement: If you accept it, click “Yes”.



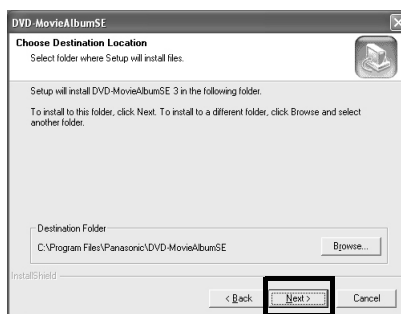
Click

- 4 Choose the TV broadcast system (NTSC or PAL), click “Next”.



Click

- 5 If you do not change the folder where the software is installed, click “Next”.



Click

- 6** If you do not change the programme folder name, click “Next”.



Click

- 7** Check the contents, and then click “Next”.



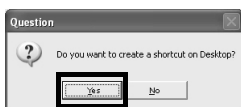
Click

If your PC uses Windows® 2000 Professional a message announcing “READ ONLY FILE DETECTION MESSAGE” will appear: Click “No”.

Proceed with installation, following the instructions on screen.

- 8** A message for verifying whether a shortcut icon is to be created on desktop will appear:

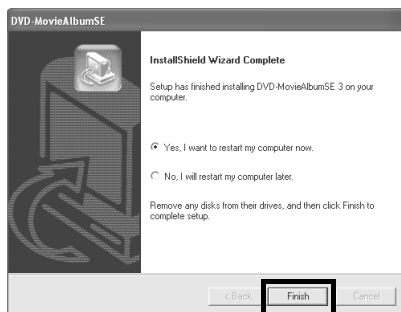
If you want to create one, click “Yes”. If not, choose “No”.



Click

Installation will start.

- 9** Choose the restart option, and then click “Finish”.



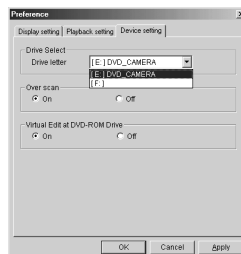
Click

Note:

- If your PC uses Windows® 2000 Professional/XP Home Edition/XP Professional, set the user name to “Administrator (computer’s manager)” (or user name with equivalent authorization), log on to PC, and then install the software (if you do not have authorization, consult your system manager.).
- When using DVD-MovieAlbumSE software on Windows® 2000 Professional/XP Home Edition/XP Professional, log on to your PC as Administrator with a login name equally authorized. If you log on with a login name other than Administrator, you can not use DVD-MovieAlbumSE.
- You can not use DVD-MovieAlbum to handle an AVI file in DV format with no sound.
- Starting DVD-MovieAlbumSE, Mount Information window may appear or the recorded movies may not be shown. If it has occurred, try following procedure.
 1. Click “Preference”, and then “Device setting”.
 2. Select the drive which the DVD-RAM disc is inserted in the “Drive Select” column, click “OK”.



“Preference” tab



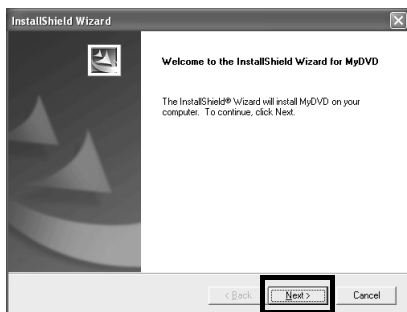
Installing MyDVD

My DVD included in the provided CD-ROM does not contain the slideshows function. Therefore you can not edit the stills on MyDVD.

- 1 Insert the provided CD-ROM into the PC, and Click “MyDVD 4.0” on the “Setup Menu” screen.

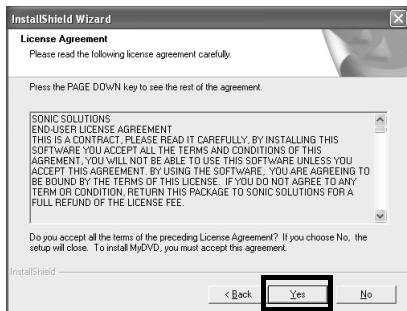
If the “Setup Menu” screen will not appear, double-click the CD-ROM drive icon.

- 2 The screen for installing “MyDVD” will appear: Click “Next”.



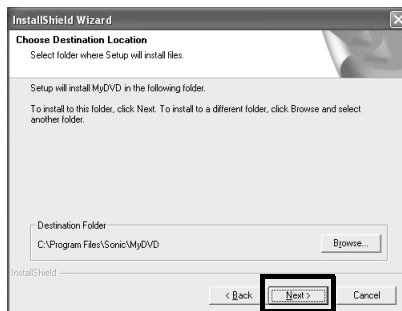
Click

- 3 Carefully read the Software License Agreement: If you accept it, click “Yes”.



Click

- 4 After you accept the Software License Agreement, “Choose Destination Location” will appear. If you do not wish to change the folder where the software is installed, click “Next”.



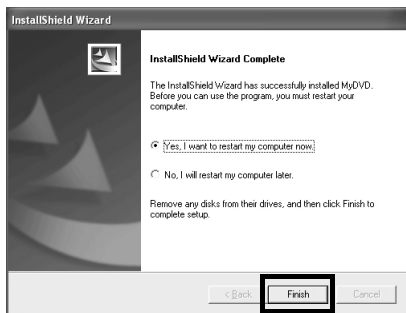
Click

- 5 Check the contents, and then click “Next”. Installation will start.



Click

6 Click “Finish”, and then restart the PC.



Click

Sonic Solutions Corporation, which developed MyDVD, recommends user registration of MyDVD, in order to offer appropriate support to customer. The guide for user registration will appear when you start MyDVD for the first time, or you can do it any time by accessing the following URL:

<http://www.mydvd.com>

(You will need the connection environment to the Internet for user registration.)

Contact the following for information on MyDVD:

Europe (London)

Phone: 44-20-7439-1477

<http://support.sonic.com/>

(You will need to perform customer registration.)

Note:

- If software that detects computer virus, etc. has been installed, invalidate it.
- If your PC uses Windows® XP Home Edition/ Professional or Windows® 2000 Professional, set the user name to “Administrator (computer’s manager)” (or user name with equivalent authorization), log on to PC, and then install the software (if you do not have authorization, consult your system manager.).

Creating DVD Video on PC from DVD-RAM Disc Recorded on DVD Video Camera

Using DVD-MovieAlbumSE and MyDVD, you can create a DVD Video disc (DVD-R disc) from the images recorded on this DVD Video Camera, following the procedure below:

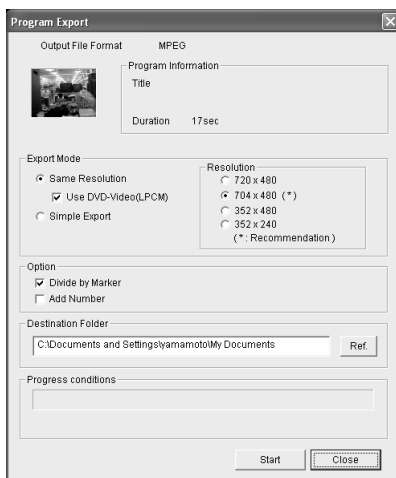
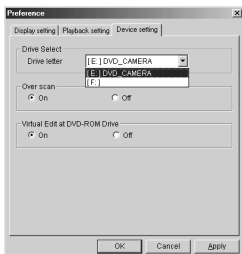
- 1 Insert a recorded DVD-RAM disc into the DVD Video Camera, and connect the DVD Video Camera to the USB terminal of PC.
- 2 Start DVD-MovieAlbumSE, and edit the images on DVD-RAM disc as necessary.
- 3 Right-click the thumbnail from which you wish to create a DVD Video disc on the DVD-MovieAlbumSE screen, and execute "Export".
- 4 The "Program Export" screen, shown below, will appear: Choose "Same Resolution" and check "Use DVD-Video(LPCM)" in the "Export Mode" setting box. Choose "704 × 480 (recommended)" for "Resolution".

Starting DVD-MovieAlbumSE, Mount Information window may appear or the recorded movies may not be shown. If it has occurred, try following procedure.

1. Click "Preference", and then "Device setting".
2. Select the drive which the DVD-RAM disc is inserted in the "Drive Select" column, click "OK".



"Preference" tab



"Program Export" Screen

Note:

- Choose "Divide by Marker" in the "Option" box: Each scene of programme recorded on the DVD Video Camera will be saved as an independent movie file so that export can be executed at high speed. If you do not choose "Divide by Marker", movie files may be unified and re-encoded, so it may take time to export them or the image quality may slightly deteriorate. DVD-MovieAlbumSE may automatically encode a movie recorded in the XTRA mode containing rapidly moving scenes (8 Mbps or higher), regardless of the "Divide by Marker" setting.
- Do not choose "Simple Export" in the "Export Mode" setting box: Choosing it may stop export midway.
- If you want to change the destination folder, click "Ref." and specify the appropriate folder.
If you want to create a new folder, type the name of new folder directly on the "Destination Folder" field.

5 Click the Start button to start export.

6 When export is complete, message "The file exporting was completed successfully. Do you wish to create a 'DVD-Video' disc or an 'MPEG file' disc?" will appear. Check the small box for "Eject the disc being used", and then click "Yes".

Insert a brand-new DVD-R disc into the DVD Video Camera.

7 DVD-MovieAlbumSE will automatically end, and the "Export to Disc" screen will appear: Click the "Start" button.

8 MyDVD will automatically start. After a few moments, the exported scene will be automatically registered on the MyDVD editing screen:

Now you can change the DVD menu to the desired style, change the title, etc. on this editing screen.



9 Click the Burn button: Writing to DVD-R disc will start. When writing is complete, a DVD video disc will be created.

Then the disc cover of DVD Video Camera will open automatically.

Note:

- The menu screen created on MyDVD will not appear on the DVD Video Camera. Also, depending on the written contents, the images may not be playable on the DVD Video Camera. In such cases, use a standard DVD player to display the created menu.
- The following table shows the recordable time on 8 cm DVD-R disc from MyDVD.

Movie quality mode of DVD-RAM disc in DVD Video Camera	Recordable time on 8 cm DVD-R disc (using MyDVD)
STD	Approx. 40 minutes
FINE	Approx. 25 minutes
XTRA	At least 18 minutes

Uninstalling Software

Use the following procedure to uninstall (delete) any provided software that has been installed:

Uninstalling USB Driver

With Windows® 98 Second Edition/Me:

1 Set the power switch on DVD Video Camera to “”, and use the USB cable to connect it to the PC.

2 Open “System” on “Control Panel”, and then choose the “Device Manager” tab.

3 Delete “MATSHITA DVD-CAMERA M5070” in “CDROM”.

If no item exists, proceed with the next step.

4 Delete “MATSHITA DVD-CAMERA M5070” in “Disk drives”.

If no item exists, proceed with the next step.

5 Delete the following item in “Universal Serial Bus controllers”:

“Panasonic DVD CAMERA DVD Mode USB Interface”

If no item exists, proceed with the next step.

6 Close Device Manager.

If the message for restart appears, click “No”.

7 Delete the following files.

Windows® 98 Second Edition:

C:\WINDOWS\INF\OTHER\Hitachi Ltd.
DZ3298.inf

C:\WINDOWS\SYSTEM\IOSUBSYS\dzmvpdr
.pdr

C:\WINDOWS\SYSTEM32\DRIVERS\DZMVUM
SS.sys

Windows® Me:


C:\WINDOWS\INF\OTHER\Hitachi Ltd.
DZ32Me.inf

No extension may appear depending on the setting on PC.

If the INF folder cannot be found, use Explorer to choose the “View” menu, “Folder Options”, “View” tab, and then “Show all files”: Click “OK” and then try again.

8 Disconnect the DVD Video Camera from PC, and then restart the PC.

With Windows® 2000 Professional/XP Home Edition/XP Professional:

1 Set the power switch on DVD Video Camera to “”, and use the USB cable to connect it to the PC.

2 Open “System” on “Control Panel”, and then click “Device Manager” under the “Hardware” tab.

3 Delete “MATSHITA DVD-CAMERA M5070 USB Device” in “DVD/CD-ROM drive”.

4 If your PC uses Windows® 2000 Professional, delete “MATSHITA DVD-CAMERA M5070 USB Device” in “Disk drives”.

If your PC uses Windows® XP Home Edition/XP Professional or no item exists, proceed with the next step.

5 Delete “Panasonic DVD CAMERA DVD Mode USB Interface” in “Universal Serial Bus controllers”.

If no item exists, proceed with the next step.

6 Close Device Manager.

If the message for restart appears, click “No”.

7 If your PC uses Windows® 2000 Professional, open the C:\WINNT\INF folder.

If your PC uses Windows® XP Home Edition/XP Professional, open the C:\WINDOWS\INF folder.

If INF folder cannot be found, use Explorer to choose “Tools” menu, “Folder Options”, “View” tab, and then “Show all files and folders”: Click “OK” and then try again.

8 Use application software “Notepad” provided with Windows® to open the oem*.inf files (* represents a number) from the file with the higher number. Search for the files with the following entry on the second and fourth lines, and then delete them:

```
; Panasonic DVD DIGICAM USB Driver
Installation File
; Support Model : VDR- M50/70 Series
```

Extension “.inf” may not appear, depending on the setting of PC.

9 Also delete the oem*.PNF files with the same numbers as those of the files deleted in step 8.

10 Disconnect the DVD Video Camera from PC, and then restart the PC.

Deleting Other Applications

To uninstall the other applications, use “Control Panel” to open “Add or Remove Applications”, choose the applications to be uninstalled from the displayed list of applications, and then click the “Change/Remove”.

Note:

After uninstalling software, be sure to restart the PC.

Subsidiary Information

Cleaning

Be sure to set the power switch to "OFF" before cleaning this DVD Video Camera.

● Cleaning LCD screen and camera lens

Use dry, soft cloth to wipe dirt off. When cleaning the LCD screen, be careful not to use force, scratch it, or subject it to impact: Doing such could cause a defect in the screen, result in display unevenness, or damage the LCD monitor.


● If dust adheres to the viewfinder lens, remove it using a cotton swab, etc.



Do not rub the lens with force: Doing so could scratch the lens.

● Do not use benzene or thinner to clean DVD Video Camera case

The coating of case could peel off or the case could deteriorate. Wipe off dirt on the case with a moist cloth which has been completely wrung out. When using chemical cleaning cloth, follow instructions for use.

Before Requesting Service

Check 1	No movie can be recorded
<p>Movie can be recorded only on DVD-RAM or DVD-R disc.</p> <p>Check the following:</p> <ul style="list-style-type: none"> • Is DVD-RAM or DVD-R disc inserted? • Is power switch set to "  "? • Is the DVD-RAM disc in DVD Video Camera write-protected? Release the write-protect. • Does disc have remaining recording space? <p>If movie still cannot be recorded after the above check is clear, the disc may be damaged: Use another disc.</p>	

Check 2	No still can be recorded
<p>Still can be recorded only on DVD-RAM disc, SD Memory Card or MultiMediaCard.</p> <p>Check the following:</p> <ul style="list-style-type: none"> • Is DVD-RAM disc, SD Memory Card or MultiMediaCard inserted? • Is power switch set to match the recording medium? <ul style="list-style-type: none"> – When using DVD-RAM disc: Set to "  ". – When using SD memory or MultiMediaCard: Set to "  ". • Is loaded DVD-RAM disc write-protected? • When using SD Memory Card: Is it locked? • Does disc or card have remaining recording space? <p>If still cannot be recorded after the above check is clear, the disc or card may be damaged: Use another disc or card.</p>	

Check 3	Skip or search playback does not work well
<p>If the temperature inside the DVD Video Camera is high, normal operation may not be possible. Turn the DVD Video Camera off, wait for a few moments, and then turn it on again for operation.</p>	

Check 4	<ul style="list-style-type: none"> • No operation can be performed because the ACCESS/PC or CARD ACCESS indicator on this DVD Video Camera remains lit or blinking. • After disc or card is inserted, it takes some time until recording is possible.
<p>In the following cases, it will take more time than usual until operation is possible:</p> <ul style="list-style-type: none"> • When disc or card is removed and then reinserted • When date changes (e.g., during the first recording of the day) • When the temperature is greatly different from the status of previous recording • When disc with scratches, dirt or fingerprints is inserted • When disc is subject to severe vibrations • When the battery or DC power cord was disconnected instead of following the correct procedure using power switch to turn the DVD Video Camera off 	

Check 5	No DVD Video Camera operation
Is a fully charged battery attached?	
Is the DVD Video Camera powered from AC outlet?	

Check 6	No image in viewfinder
Is LCD monitor open?	
No image will appear in viewfinder unless the LCD monitor is closed and securely locked to DVD Video Camera.	

Check 7	No image appears on the LCD screen or in the viewfinder
<ul style="list-style-type: none"> Is DVD Video Camera connected to PC using USB cable? Unplug the USB cable. Does DVD Video Camera stop at the end of the scene to which wipe-out was set and played back? Press the DISC NAVIGATION button. 	

Trouble Messages

A message may appear while you are operating the DVD Video Camera. If a message appears, refer to the following table and take appropriate corrective action.

Message	Cause & Troubleshooting	Reference page
(1) Data error in a part of image file. Repair data now? (2) Found error in image file. Repair data now? (3) Data error in all image file. Repair all data now?	<p>It is possible that the system cannot normally complete writing of file when power is turned off for some reason during recording or editing (deleting, dividing or combining scenes, or creating play list). Selecting "YES" will automatically repair the video file, but even if "NO" is selected, the same message will appear when the DVD Video Camera is turned on next time. (Do not remove the disc while the DVD Video Camera is recognising it: Ignoring this will deactivate the file repair function.)</p> <p>Follow the instructions on screen, taking note of the following cautions:</p> <ul style="list-style-type: none"> • Data may not be repaired, depending on the timing when power was turned off. • Data may not be repaired normally if data recorded on another recorder is mixed in. • The repaired data may be different from the original recorded content because of partial deletion of defective portion. • Since the date/time for repair is added to the repaired data (only the corrected portion for partial repair), the original date/time information will be lost. • Since all movies, and then all stills, are repaired, the order of recorded contents will be lost. (In case of message (2) (3) only) • See *1 on page 152. 	—
(1) Error has occurred. Please restart. (2) Error has occurred. Please reinsert a disc. (3) Error has occurred. Error code No. xxxx. Please read the manual. (4) ERROR xxxx	<p>• Error has occurred. Try to restart the DVD Video Camera using the following methods:</p> <p>(1) Turn power off, remove the battery or AC adaptor/charger and reattach it, and then turn power on again.</p> <p>(2) Turn power off, and reinsert the disc. Then turn power on again.</p> <p>(3) See *3 on page 152.</p> <p>(4) If you have another disc available, check to see if any problem occurs with the disc. If another disc can be used normally, the original disc may be defective: Contact the disc manufacturer.</p> <p>If the above procedures cannot solve the problem, take note of the error number, and contact your dealer.</p> <p>Reference: "Error Code 2881" shows that the disc cannot be recognized properly.</p>	6, 40, 43, 44

Message	Cause & Troubleshooting	Reference page
(1) This disc must be formatted before it can be used by this camera. (2) Do not format this disc if you want to record from the PC connection terminal. (3) Format the disc now?	DVD-R disc that was not initialised for camera use was inserted.	45
Battery is almost empty. Replace it.	Replace with a charged battery, or use AC adaptor/charger to power the DVD Video Camera.	21, 43
Cannot combine scene.	Unless consecutive scenes are selected, they cannot be combined.	101
Cannot combine. Deselect PHOTO scenes.	Select only movies and combine them.	101
Cannot combine. Select multiple scenes.	Select a range of at least 2 scenes to be combined, and then combine them.	101
Cannot delete scenes.	This may occur when scene that was edited for division, etc. is to be deleted. Combine the divided scenes, and then delete them.	101
Cannot execute. Change display category to ALL.	This message will appear if you attempt to combine or move scenes with "Category: VIDEO or PHOTO" specified.	124
Cannot execute. Unselect multiple scenes.	Division or change in thumbnail was executed when multiple scenes were selected.	93
CANNOT RECORD PHOTOS	Are you using DVD-R disc? You cannot record still image on DVD-R disc. Use DVD-RAM disc to record still images.	26
Cannot replace thumbnail on PHOTO scene.	The thumbnail of a still cannot be changed. Select a movie.	98
Cannot select any more scenes.	The maximum number of selectable scenes is 999.	106

Message	Cause & Troubleshooting	Reference page
CARD ALMOST FULL	Remaining space is only enough to record less than 10 stills. Delete unnecessary stills and try the card, or use another card.	31, 96
Card error has occurred. Format the card now?	Was the card formatted on PC? Was formatting interrupted midway? When using the card on this DVD Video Camera, choose "YES" and format it.	121
Card error has occurred. Formatting is not complete.	The card may be damaged: Use another card.	29
Card error.	<ul style="list-style-type: none"> The card terminals may be dirty: Wipe off dirt, and try the card again, or use another card. Data other than still image may be included: Use another card. 	29
Card error has occurred. Keep card inside & restart.	Card error could have occurred during editing of scenes. Turn off the DVD Video Camera with the card being used inside, connect the AC adaptor/charger, and then power the DVD Video Camera again. Repair of scenes will be attempted.	43, 48
Card full.	Delete unnecessary stills and try the card, or use another card.	31, 96
	No more recording on this card can be done: Delete unnecessary stills or use another card.	
Card full. Cannot execute.	Delete unnecessary stills and try the card, or use another card.	31, 96
Card has no data.	This message will appear when an attempt is made to execute playback or editing on Disc Navigation with no scene recorded.	—
Card is not formatted. Format the card now?	Was the card formatted on PC? When using the card on this DVD Video Camera, choose "YES" and format it.	121
Control Information Error.	Mismatch may occur between the recorded image and scene information. Update the control information.	122
	<ul style="list-style-type: none"> Use another disc. See *3 on page 152. 	26, 70

Message	Cause & Troubleshooting	Reference page
DISC ACCESS	The recorded scene is being stored on disc. Wait until the message disappears, and you can start to use the DVD Video Camera.	49, 50
	This DVD Video Camera is verifying whether the correct disc has been inserted. Wait until the message disappears, and you can start to use the DVD Video Camera. This message will be displayed for a little longer when the date changes.	—
DISC ALMOST FULL	The disc will soon be full, and recording will be impossible. Delete unnecessary scenes and try the disc again, or use another disc.	30, 31, 96
Disc error has occurred. Finalising is not complete.	<ul style="list-style-type: none"> Disc error occurred during finalising, and finalising failed. Replace the disc. See *3 on 152. 	123
Disc error has occurred. Format the disc now?	<ul style="list-style-type: none"> Has the disc been initialised on PC? Has initialising the disc on PC been interrupted? Choose "YES" and initialise the disc when using it on this DVD Video Camera. initialising the disc will erase all data on it. See *2 on page 152. 	121
Disc error has occurred. Formatting is not complete.	<p>The disc may be dirty. Remove the disc and wipe off fingerprints, dust, etc. before reusing it, or use another disc.</p> <p>This message may also appear if you insert a disc for which formatting was interrupted midway. In this case, use another disc.</p>	70, 121
Disc error has occurred. Keep disc inside & restart.	<p>Disc error could have occurred during editing of scenes. Turn off the DVD Video Camera with the disc being used in it, connect AC adaptor/charger, and then power the DVD Video Camera again. Repair of scenes will be tried.</p>	43
Disc error.	<ul style="list-style-type: none"> Use another disc. See *3 on page 152. 	26, 70
	<ul style="list-style-type: none"> Mismatch in recording information may be caused by editing done on some device other than this DVD Video Camera. initialise the disc or use another disc. initialising the disc will erase all data on it. 	121

Message	Cause & Troubleshooting	Reference page
Disc full. Cannot execute.	Delete unnecessary scenes before using this disc, or use another disc.	96
Disc has no data.	This message will appear when an attempt is made to execute playback or editing on Disc Navigation with no scene recorded.	—
Disc has no PlayList.	Switching of play list was selected with no play list stored.	112
Disc includes protected scenes. Delete scenes?	The disc may be software protected from a device other than this DVD Video Camera. To release this case, use a device that has executed software-protect.	—
Disc is full. Cannot add control info.	The number of entered scenes has reached the limit that can be entered, so the control information for generating thumbnails cannot be added. Combine several scenes or delete them.	96, 101
Disc is not formatted. Format the disc now?	<ul style="list-style-type: none"> Has the disc been initialised on a PC? Choose "YES" and initialise the disc when using it on this DVD Video Camera. Initialisation will delete all data on the disc. See *2 on page 152. 	121
DPOF is not set to a scene.	This message will appear when "Slide Show: DPOF" is specified for the card to which DPOF was not set.	125
DPOF scenes over limit. Cannot set DPOF scenes.	The maximum number of scenes for which DPOF can be set is 999.	105
Drive overheat. Please retry later.	The temperature inside the DVD Video Camera is too high, and reading or writing of the data on disc may not be performed normally. Turn the DVD Video Camera off and wait for a while. The temperature will be effectively decreased if the DVD Video Camera is placed in a well-ventilated spot.	48
DVD-R Disc, Video mode cannot be changed.	With DVD-R disc, the movie quality mode once used for recording cannot be changed.	30
END OF DISC	The disc is full. You cannot record on this disc anymore. Prepare another disc or delete unnecessary movie scenes from this disc.	30
End scene cannot be divided.	Division is not possible at the end of scene.	102
Error occurred. Please replace disc or format disc.	<ul style="list-style-type: none"> Abnormality has occurred with the DVD-RAM disc to be repaired. initialise the disc before using it, or use the another disc. initialising the disc will erase all data on it. See *2 on page 152. 	121
Error occurred. Please replace disc.	An abnormality occurred with a DVD-R disc to be repaired. Replace the disc.	—

Message	Cause & Troubleshooting	Reference page
Finalise may not be complete. Finalise again now?	Instantaneous shutoff occurred during finalising, after which power was supplied and disc was inserted.	123
It is unrecordable on this card.	The inserted card cannot be used in this DVD Video Camera: Use another card.	29
JPEG file related to scenes are not found.	This message will appear when stills recorded on DVD-RAM disc using a device other than this DVD Video Camera are to be copied to card.	—
No card.	Insert a card.	47
No card. Please insert card.	No card is inserted. Insert a card.	47
NO DISC	This message may appear when the DVD Video Camera or disc is moved from a cold place to a warm place. Condensation has occurred on the video camera lens or DVD-RAM drive. Do not remove the disc; leave the DVD Video Camera turned off in a place as dry as possible for 1-2 hours.	6
	The disc has not been inserted. Insert it.	44
No more scenes. Play List was deleted.	<ul style="list-style-type: none"> All scenes are deleted from the play list. Since a play list with no scenes cannot be supported by specifications, a play list from which all registered scenes have been deselected will be deleted. 	115, 116
Photo cannot be divided.	Still image cannot be divided.	102
PlayLists over limit.	An attempt was made to create new play list or copy play list, even though limit specified for play lists in the video recording standard had already been stored.	111
Same scenes on Play List will be deleted. Delete scenes?	<ul style="list-style-type: none"> This will appear when scenes are to be deleted. When a play list exists on disc, an attempt to delete scenes in program will display this message (This message will not appear if you deselect scenes from play list.). 	96
Scenes over limit. Cannot add scenes.	The number of scenes entered in play list has reached the limit that can be entered. Delete several scenes.	111, 116
Scenes over limit. Cannot divide scene.	The number of entered scenes has reached the limit that can be entered. Delete several scenes.	102, 111
Scenes over limit. Cannot move scene.	This message will appear if you try to move a scene when the number of scenes has already reached the registrable limit.	99, 111

Message	Cause & Troubleshooting	Reference page
Stop processing.	The button was pressed to stop processing of multiple scenes.	—
There was no scene which can be deleted.	This message will appear if you try to delete multiple scenes on Disc Navigation when all the selected scenes have been locked. Release the lock on scenes before executing deletion.	96, 104
This card cannot be used. Please replace card.	The card cannot be used in this DVD Video Camera: Use another card.	29
This disc cannot be used. Please replace disc.	A disc that cannot be used on this DVD Video Camera has been loaded. Check the type of disc.	27
This disc is recorded by the NTSC system. Please replace disc.	This DVD Video Camera can use only discs recorded on the PAL system. A disc recorded on the NTSC system cannot be used on this DVD Video Camera.	—
Top scene cannot be divided.	Division is not possible at the start of scene.	102
UNFORMAT DISC	The disc is not initialised or it is damaged. If this message appears, be sure to initialise the disc on this DVD Video Camera before using it. Reinitialising even a disc used on this DVD Video Camera may be necessary (initialising will erase all recorded contents on disc). If this message appears, try to initialise the disc. If the same message still appears, the disc may be damaged: Use another disc.	121
	See *2 on page 152.	28
Use AC adaptor/charger.	Finalisation is not possible when the DVD Video Camera is powered by a battery: Use the AC adaptor/charger for finalisation.	43, 123
Use AC adaptor/charger. Turn off power.	Scene cannot be repaired when the DVD Video Camera is powered by a battery. If the AC adaptor/charger is unavailable in handy place, remove the disc, use the opposite side, or use another disc. To repair the removed disc, insert the disc into the DVD Video Camera afterwards, and connect the AC adaptor/charger.	43
VIDEO scene cannot be copied to card.	No movie can be copied to card. Select stills and copy them to card.	103
Write protected. Check card. Write protected. Check disk.	<ul style="list-style-type: none"> A locked card or write-protected disc is inserted. Release the lock or write-protect using the Card or Disc Navigation menu. 	29, 120

*1

- This message may also appear when dirt adheres to disc. If this message appears when a recorded disc is recognised immediately after it is inserted, do not repair the disc; remove it and then use a soft, dry cloth to clean off the dirt before using it.
- This message may also appear when condensation occurs. In this case, do not repair the disc; turn the DVD Video Camera off, wait until it dries out, and then turn it on again.
- If the repair message appears when you turn the DVD Video Camera on from off with a disc loaded after recording on it, choose repair.
- If the repair message appears when recording and playback are normally possible with another disc - and no condensation occurs and the disc is not dirty - choose repair.

*2

- This message may also appear when dirt adheres to disc. In this case, do not initialise the disc; remove it and then use a soft, dry cloth to clean the dirt before using it.
- This message may also appear when condensation occurs. In this case, do not initialise the disc; turn the DVD Video Camera off, wait until it dries out, and then turn it on again.
- Initialisation will delete all data on disc.

*3

- This message may also appear when dirt adheres to disc. Remove the disc and then use a soft, dry cloth to clean the dirt before using it.
- This message may also appear when condensation occurs. Wait until the DVD Video Camera dries out, and then turn it on again.
- This message will appear when a single-sided disc is inserted in reverse. Reinsert the disc correctly. (Insert the disc with the label printed surface facing the outside.)




Troubleshooting

Check to see the following before asking for a repair. If the suggested solution still cannot restore the DVD Video Camera to normal, do not attempt to repair it yourself, but consult your dealer.

Power supplies

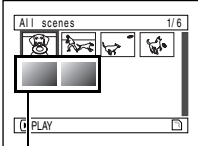
Symptom	Cause and Correction	Reference page
Battery cannot be charged.	Is the ambient temperature too low or too high? Charge the battery at 10-30°C.	21, 40
	Is the battery abnormally hot? Remove the battery, leave it for a while to cool down, then charge it.	
	Is the DC power cord connected to AC adaptor/charger? Unplug it.	
	Has the battery been unused for a long time? Remove the battery, and then reattach it. If the battery is still not charged, it may be dead: Purchase a new one. * If the battery does not charge after you try the above four procedures, it may be dead: Purchase a new battery.	
Battery weakens fast.	Are you using the DVD Video Camera where the temperature is very low? The DVD Video Camera can normally be used for 40-60 minutes with a fully charged battery, but this time will be shorter at low temperatures. Keep extra batteries on hand.	41
	Battery may be dead. The performance of battery will deteriorate if it is used for an extended period of time or frequently: Purchase a new battery.	42
The CHARGE indicator on AC adaptor/charger is blinking.	Is the ambient temperature too low or too high? Charge the battery in environment where the temperature is 10-30°C. The battery has possibly discharged excessively. Continue charging: After a while, the battery will be charged to the specified voltage, and the CHARGE indicator will light. Then the battery charge will be completed normally.	21
Power turns off immediately after being turned on.	Is battery charged? Charge it.	21, 40
When power is turned on, the LCD screen will turn on and off.		
Power goes off unexpectedly.	Is Power Save set to "On"? If the powered DVD Video Camera is left for as long as 5 minutes without recording or playback with "Power Save: On" specified, it will automatically turn off to save battery power. To restart recording in this case, set the power switch to "OFF" and then set it to "📷". You can also specify "Power Save: Off" to stop automatic power off.	87
Power cannot be turned off.	Detach the battery or AC adaptor/charger once, and then press the RESET button of DVD Video Camera: Reattach a power supply to DVD Video Camera before turning it on again.	—

During recording

Symptom	Cause and Correction	Reference page
Recording starts but stops immediately.	Is disc scratched or does dirt or fingerprint adhere to it? Clean the disc. If there is still no improvement, replace the disc.	70
	If you turn this DVD Video Camera on for many hours in a high temperature location, this DVD Video Camera may automatically stop recording for the protection of the lens in the laser pickup assembly. In this case, follow the messages on the display of this camera. To start the recording again, turn this camera off and leave it for a while.	—
Some vibrations are felt or slight sound is heard from mechanism.	These vibrations or sound are caused by disc drive: This does not indicate a fault.	—
LCD screen is hard to see.	Has brightness of LCD screen been adjusted? Stop recording and adjust the brightness.	86
	Is the DVD Video Camera being used outdoors? Use the viewfinder. When using LCD monitor, adjust its angle so that LCD screen is not exposed to direct sunlight.	35, 37
Focus is not correct.	Is it difficult to use auto focus with your subject? Focus manually.	63
	Does "MF" appear? The DVD Video Camera is set to manual focus. Focus the subject manually, or release manual focus.	62
	Is the dioptre control correctly adjusted if you are using the viewfinder as a monitor? Adjust the dioptre control.	35
	In cases other than the above, set the power switch to "OFF", and then set it to "  ", "  " or "  " again.	48

During playback


Symptom	Cause and Correction	Reference page
Recognition of disc is not complete.	Is disc dirty? Use soft, dry cloth to clean it.	70
Pressing the playback button will not start playback.	Has the image been recorded by devices other than this DVD Video Camera? Playback of image recorded on devices other than this DVD Video Camera may be impossible on this DVD Video Camera. Has scene been edited on a device other than this DVD Video Camera? If a scene recorded on this DVD Video Camera is edited on a device other than this DVD Video Camera, playback may not be possible on this DVD Video Camera.	122
No playback picture appears on TV screen.	Is TV input selector set correctly? Some TVs have multiple video input jacks. Check whether the correct input was selected on TV to match the connected jacks. If the DVD Video Camera is connected to VCR, set its input selector to "external input (LINE)".	67
	Is the DVD Video Camera connected to TV correctly? Check the connections.	66
Playback picture is momentarily interrupted.	Is disc scratched or does dirt or fingerprint adhere to it? Clean the disc.	70
Poor playback picture	Was the image input from analog VCR (VHS, 8 mm) and recorded? The problem may be improved if a VCR equipped with TBC circuit is used for playback.	—
No sound	Is the TV volume control set correctly? Adjust TV volume control, and be sure to adjust the volume on TV.	67

Symptom	Cause and Correction	Reference page
<p>Photos on card cannot be played back.</p>	<p>This DVD Video Camera can play back image data recorded on SD Memory Card in other digital cameras conforming to the DCF (Design rule for Camera File system) standard. The range of image data normally playable on this DVD Video Camera is that with pixels from 80 horizontal x 60 vertical to 4000 horizontal x 3000 vertical. If the pixel data is outside this range, blue thumbnails will appear (thumbnails* in the figure), meaning the image is unplayable.</p>  <p style="text-align: center;">Fig. 1</p> <p>Even when the number of pixels is within the above range, playback may not be possible, depending on the recording status of the digital cameras used.</p> <p>DCF (Design rule for Camera File system) is an integrated image file format of digital cameras: Image files can be used on all digital devices conforming to DCF.</p>	<p>—</p>
<p>It will take some time to play back photos on card.</p>	<p>When playing back a still, "Playback." will appear: Stills with a large number of pixels will take some time to appear.</p>	<p>—</p>

When the DVD Video Camera is connected to PC:

Symptom	Cause and Correction	Reference page
No drive icon appears on PC.	The DVD Video Camera is not turned on. Check the power supply.	48
	Driver is not properly recognised. Turn PC off and on again. If the drive icon still does not appear, use "Refresh driver" in Device Manager to reinstall the driver.	—
	Turn PC off and then disconnect the USB cable. Turn PC on again, and then use the USB cable to connect the DVD Video Camera to PC.	—
	Make sure the USB cable is completely plugged into this DVD Video Camera.	—
	If a yellow "!" mark is attached to some device in Windows® Device Manager, uninstall the USB device driver, and then reinstall it, following the procedure on page 129.	—
Error occurs in playback of DVD Video Camera on PC.	If error occurs with USB connection, the transfer rate is not sufficient. It is recommended that you use a USB port conforming to USB2.0 when connecting the DVD Video Camera.	—
Application is not normally run on PC.	Turn the PC and DVD Video Camera off, and try again.	—
Error occurs during writing to DVD-R disc.	The temperature of DVD Video Camera is too high due to continuous operation. Disconnect the DVD Video Camera from PC once, remove the disc from the DVD Video Camera, and then turn it off. After a few moments, connect them again and write to a brand-new disc.	—
Transfer of images stops.	Connect the DVD Video Camera to another USB terminal of PC. If your PC is a desktop type, it is recommended that you use USB terminal on the back of PC.	—
DVD-RAM/R/RW drive built into PC cannot be used after the provided software has been installed.	This problem may be solved if the software related to DVD-RAM/R/RW of your PC is upgraded, or if the DVD-RAM Driver is uninstalled. However, with Windows® 98 Second Edition / Me / 2000 Professional, uninstalling the DVD-RAM Driver will make it impossible for the JPEG stills recorded on DVD-RAM of this DVD Video Camera to be read by the PC.	—
DVD-R disc cannot be played back on DVD-MovieAlbumSE.	DVD-MovieAlbumSE does not support playback or data read on DVD-R disc: Use generally available DVD video playback software to play back DVD-R disc on PC.	134
Error appears when starting DVD-MovieAlbumSE.	Make sure that your PC display adaptor (video card) conforms to DirectX 8.1.	—
Video written to hard disk of PC cannot be edited on DVD-MovieAlbum copy tool.	DVD-MovieAlbumSE cannot edit DVD-VR data stored on hard disk of PC: Copy the data to another DVD-RAM disc and then edit it.	—
Movies are not recognised by application in PC.	Make sure the power switch of this DVD Video Camera is set to "📷", "📹" or "SD".	—

Symptom	Cause and Correction	Reference page
The DISC EJECT button is not valid when the DVD Video Camera is connected to PC.	While the DVD Video Camera is connected to PC, use Explorer to right-click the DVD Video Camera drive icon and execute "Eject".	—
The DVD-RAM drive of DVD Video Camera cannot be opened by PC Explorer or application. Error appears. Disc cannot be ejected.	If DVD-MovieAlbumSE is running, terminate it.	—
When the time stamp of file in DVD-RAM is viewed on PC, it is different from the actual recording time.	The file system of this DVD Video Camera is operated on Greenwich Mean Time (GMT), and time lag information has not been set. With Windows® as of January, 2004, the time stamp of file viewed on Explorer looks different from the actual recording time. The actual recording time will appear for date/time indication on playback screen.	—
When DVD-MovieAlbumSE is started, "Disc in Drive X: cannot be used" appears.	A disc other than DVD-RAM is loaded in drive: DVD-MovieAlbumSE cannot be used for media other than DVD-RAM.	—
	Click the "Preference" button in the dialog box, click the "Device Setting" tab to choose the drive where DVD-RAM disc is loaded in the "Drive Select" column, and then click "OK".	—
An image that should have been recorded does not appear when DVD-MovieAlbumSE is started.	Click the "Preference" button at top right of DVD-MovieAlbumSE screen, click the "Device Setting" tab to choose the drive where DVD-RAM disc is loaded in the "Drive Select" column, and then click "OK".	—
"DISC ERROR" appears when releasing write-protect.	A disc that was write-protected using the write-protect setting tool (WPTOOL) equipped with the DVD-RAM Driver on the CD-ROM provided with this DVD Video Camera cannot be released on this DVD Video Camera as is. Use the write-protect setting tool on PC to release the write-protect.	—
No USB HS (high speed) connection even when USB2.0 card is used.	Make sure that you have already installed the driver provided with the USB2.0 card. You will need to install the driver provided by USB2.0 card maker in order to operate the USB2.0 card at HS (high speed).	—
Executing "Export" on DVD-MovieAlbumSE will interrupt reading midway.	Do not choose "Simple Export": If you do, reading will stop midway.	—
When executing "Export" on DVD-MovieAlbumSE, it will take time to read.	<ul style="list-style-type: none"> If stills are included in the range of "export", it may take more time because data must be re-encoded and read. If "Divide by Maker" is not chosen, it may take some time because data will be read while being re-encoded. 	138

Symptom	Cause and Correction	Reference page
Power does not come on, or no operation occurs by pressing button.	Execute system reset (press the RESET button).	160
	Has the DVD Video Camera been subjected to impact? The DVD Video Camera could be damaged. Consult your dealer.	—
The date and time are incorrect.	Has the DVD Video Camera been left unused for a long period of time? The internal backup battery may be discharged: Charge it.	38
No scene can be deleted.	Is the cursor placed on the scene to be deleted? If the selected scene (framed in red) exists, that scene will be deleted even if you use yellow cursor to select any scene. Check the colours of cursors and bar graph on the thumbnail screen.	91
Disc cannot be removed.	Did you detach the battery or AC adaptor/charger before setting the power switch to "OFF"? Connect the battery or AC adaptor/charger, set the power switch to "  " and then "OFF", and remove the disc.	43, 48
DVD Video Camera cannot be operated from remote control.	Is the remote control pointed at the infrared receiver on DVD Video Camera? Point it at the infrared receiver to operate the DVD Video Camera.	35
	Is the infrared receiver on DVD Video Camera exposed to direct sunlight or strong fluorescent light, etc.? The remote control cannot operate the DVD Video Camera when strong light strikes the infrared receiver. Adjust the place or angle of the DVD Video Camera.	35
	Is there battery in the remote control? Also check the polarities of battery. The battery could be dead: Try replacing it.	34
	Is the DVD Video Camera powered? Turn it on.	48
Disc cover cannot be closed.	Is disc correctly inserted? Was disc inserted from wrong direction? Remove the disc and then reinsert it.	44
	Is disc inserted in wrong orientation? Remove the disc, and then reinsert it.	44
	Connect a fully charged battery pack or AC adaptor, and then turn the DVD Video Camera on.	21
Cover will not open.	Did you disconnect the battery pack or AC adaptor during removal of disc? Reconnect the battery pack or AC adaptor, and then turn the DVD Video Camera on.	40, 43
Operating sound is heard cyclically.	This sound is heard because the disc is cyclically operated and does not indicate a fault.	—

System Reset

If the DVD Video Camera does not operate normally, perform "System Reset": The DVD Video Camera may recover to normal. "System Reset" will reset all settings to factory defaults. The date and time will also be reset: Set the date and time again before using the DVD Video Camera.

- 1 Set the power switch to "OFF" to turn the DVD video camera off.

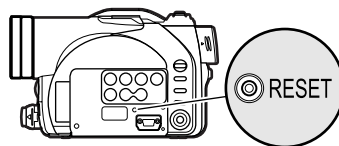
Detach the battery or AC adaptor/charger.

- 2 Use a fine tipped pen to hold down the reset button for several seconds.

All settings will be reset.

Note:

Do not press the reset button with undue force.



●List of setting items

	Item	Default	Setting method
Camera Functions Setup	Program AE	Auto	P. 76
	White Bal.	Auto	P. 77
	SIS	Off	P. 79
	Dig.Zoom	Off	P. 55
	Wind Cut	Off	P. 79
	Cinema	Off	P. 80
Record Functions Setup	VIDEO Mode	FINE	P. 81
	Quality	NORM	P. 82
	Self Timer	Off	P. 84
	OSD Output	On	P. 85
Date Setup	Date Mode	D/M/Y	P. 39
	Date Set	1/1/2004 0:00	P. 38
LCD Setup	Brightness	◀ [] ▶	P. 86
	Colour Level	◀ [] ▶	P. 86
Initial Setup	Beep	On	P. 87
	Power Save	Off	P. 87
	Record LED	On	P. 88
	Language	English	P. 88

* Some items will not appear depending on the disc or card inserted.

Major Specifications

DVD Video Camera

Information for your safety

Power Source:	DC 7.9/7.2 V
Power Consumption:	When recording with LCD monitor on VDR-M50GC approx. 4.8 W (in FINE mode) VDR-M70GC approx. 5.1 W (in FINE mode)

CCD		VDR-M50GC: 1/6-inch interlaced VDR-M70GC: 1/4-inch interlaced Total number of pixels VDR-M50GC: approx. 800,000 VDR-M70GC: approx. 1,020,000 Number of effective pixels VDR-M50GC: Movie: approx. 410,000 Still: approx. 410,000 VDR-M70GC: Movie: approx. 570,000 Still: approx. 960,000
Lens		VDR-M50GC: F1.8-3.6, f = 2.1-37.8 mm VDR-M70GC: F1.8-2.4, f = 3.8-38 mm Filter diameter: 37 mm
Focus		Auto/Manual
Zoom		Optical 18x (VDR-M50GC), Optical 10x (VDR-M70GC), (40x-500x (VDR-M50GC), 40x-240x (VDR-M70GC) with digital zoom added) 40x for still
Required minimum illumination		12 lx (3 lx: When Low Light mode is selected)
Viewfinder		0.33-inch colour TFT (approx. 110,000 pixels)
LCD monitor		2.5-inch colour TFT (approx. 120,000 pixels)
Image stabiliser		Electronic type
Shutter speed		1/60 - 1/4000 second (movie)
Self-timer recording		Still recording only
External microphone jack		ø3.5 mm stereo mini-jack: (a plug-in power type microphone cannot be used)
USB		USB 2.0 compliant (Hi-Speed)
Recording mode		Movie (with sound) Still (with DVD-RAM disc, SD Memory Card, MultiMediaCard)
Maximum recordable time (per side)	DVD-RAM disc	approx. 18 minutes (XTRA) approx. 30 minutes (FINE) approx. 60 minutes (STD)
	DVD-R disc	approx. 30 minutes (FINE) approx. 60 minutes (STD)
Maximum number of recordable stills	DVD-RAM disc (per side)	999. However, if movies and stills are mixed on one disc, the recordable number will decrease.
	SD Memory Card (when using 32 MB card)	VDR-M50GC approx. 220 (in FINE mode) VDR-M70GC approx. 50 (in FINE mode) Varies depending on the recording quality and the type of card (P. 31).

Recording format	DVD-RAM disc	Movie: Conforming to DVD video recording standard Still: Simultaneous recording, conforming to DVD video recording standard (704 × 480 pixels) and JPEG (VDR-M50GC: 640 × 480 pixels, VDR-M70GC: 1280 × 960 pixels)
	DVD-R disc	Movie: Conforming to DVD video recording standard
	Card	Still: Conforming to JPEG (VDR-M50GC: 640 × 480 pixels, VDR-M70GC: 1280 × 960 pixels) standard
Audio playback format		MPEG 1 Audio layer 2, Dolby AC3
Recording medium		8 cm DVD-RAM disc (conforming to DVD-RAM Ver. 2.1 Book 2.1) 8 cm DVD-R disc (conforming to DVD-R for General Ver. 2.0) SD Memory Card, MultiMediaCard
Jacks		Video/audio input/output × 1, External microphone input × 1, USB terminal (connected to PC USB port) × 1
Battery system		Lithium-ion
Dimensions (W × H × D)		approx. 64 × 89 × 146 mm (excluding projections)
Operating temperature (humidity)		0-40°C (less than 80%). 0-30°C when connected to PC
Weight		VDR-M50GC approx. 490 g VDR-M70GC approx. 500 g (without battery pack or disc)
Total weight when recording		VDR-M50GC approx. 575 g VDR-M70GC approx. 585 g (when using CGA-DU14 battery pack)
Provided accessories		AC adaptor/charger, battery, AV/S input/output cable, infrared remote control, Lithium battery for remote control, lens cap, lens cap string, shoulder strap, mains lead, DC power cord, USB cable, software CD-ROM, 8 cm DVD-RAM disc (in Round DVD Holder)

Power Source:	AC 110-240 V, 50/60 Hz
Power Consumption:	19 W
DC Output:	DC 7.9 V, 1.4 A (DVD Video Camera Operation) DC 8.4 V, 0.65 A (Battery Charging)

Dimensions (W × H × D)	61 (W) × 32 (H) × 91 (D) mm
Weight	Approx. 105 g

Note:
Weight and dimensions shown are approximate. Designs and specifications are subject to change without prior notice.

Introduction to Optional Accessory

- | | |
|--|--|
| <ol style="list-style-type: none"> 1) AC Adaptor (VW-AD11E/GN/GK) 2) Battery Pack (Lithium/CGA-DU14/1360mAh) 3) Battery Pack (Lithium/CGA-DU21/2040mAh) 4) Wide Conversion Lens (VW-LW3707M3E) 5) Tele Conversion Lens (VW-LT3714M2E) 6) ND Filter (VW-LND37E) 7) MC Protector (VW-LMC37E) 8) Stereo Microphone (VW-VMS2E) 9) Tripod (VZ-CT55E/VW-CT45E) 10) SD Memory Card (RP-SD008/RP-SD016/
RP-SD032/RP-SD064/RP-SD128/
RP-SDH256/RP-SDH512) | <ol style="list-style-type: none"> 11) MultiMediaCard (VW-MMC8E/VW-MMC16E) 12) PC Card Adaptor for SD Memory Card
(BN-SDABPE) 13) USB Reader Writer for SD Memory Card
(BN-SDCAPE) 14) Video Flash (VW-FLH3E: only for VDR-
M70GC) 15) DVD-RAM Disc (8 cm) (LM-AK60JE) 16) DVD-R Disc (8 cm) (LM-RK30JE) <ul style="list-style-type: none"> • Some optional accessories may not be available in some countries. |
|--|--|

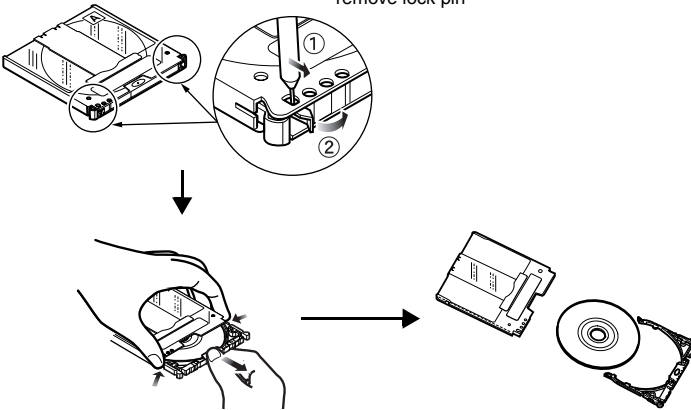
Information on Square Adaptor

This DVD Video Camera cannot use a square adaptor, such as for 8 cm DVD-RAM disc, 8 cm DVD-R disc: Remove the disc from square adaptor and set it in Round DVD Holder, referring to the instruction sheet of disc.

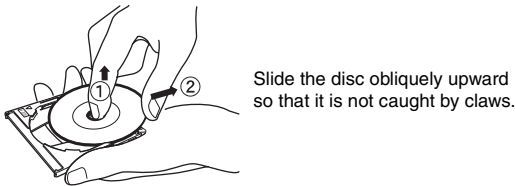
● Removing disc from square adaptor

(Example 1)

Snap off and
remove lock pin



(Example 2)



Slide the disc obliquely upward
so that it is not caught by claws.

Note:

Refer to page 70 if you want to correctly set the removed disc in Round DVD Holder that can be used in this DVD Video Camera.

Terminology

DVD-RAM disc:

Rewritable DVD disc.

DVD-R disc:

One-time recordable DVD disc.

DVD Video format:

This application format establishes the file name, directory structure, data format, etc. to record videos (movies). A generally available DVD video conforms to this format.

DVD Video recorder:

This device can record video and audio on any recordable DVD disc, such as DVD-RAM, that conforms to the DVD Video Recording format. Some DVD Video recorders can record on a DVD-R disc conforming to DVD Video format. A DVD Video recorder that is compatible with 8 cm DVD-RAM can play back DVD-RAM discs recorded on the DVD Video Camera.

DVD Video Recording format:

Format record video data on writable type DVD disc: This format is adopted by DVD Video Cameras, and DVD-RAM recorders that are compatible with DVD-RAM.

DVD Player:

This device can play back video and audio signals recorded on DVD Video and DVD-R discs using the DVD Video format. Most DVD players can play back a DVD-R disc recorded on the DVD Video Camera (some DVD players cannot play back the disc).

SD Memory Card:

SanDisk, Matsushita and Toshiba jointly developed this memory card standard in 1999. The card is 32 mm long x 24 mm wide x 2.1 mm thick, and has 9 pins. Since the SD Memory Card was developed based on MultiMediaCard (MMC), MMC can be inserted into SD Memory Card slot and used. However, an SD Memory Card cannot be inserted in the slot exclusively for MMC.

USB 2.0:

There are two kinds of USB terminals to a PC. As for USB2.0 (full speed), transfer speed is slow, and, as for USB2.0 (high speed), transfer speed is higher-speed. When you combine DVD Video Camera and use it, one to play with an USB2.0 (high speed) deployment PC can enjoy smoother movies.

Infrared sensor:

This sensor is used to adjust the white balance.

Thumbnail:

This refers to a reduced screen displayed on Disc Navigation in order to identify the recorded image contents.

Scene:

Video (movie): "One scene" refers to images recorded from one press of REC button until recording is stopped by pressing the REC button again.

Photo (still): "One scene" refers to a single photo recording by pressing the REC button.

Slot-in type PC:

PC that has a DVD drive into/from which a DVD is directly inserted or ejected without using a tray.

Disc-protect:

This disables writing to disc (protects disc from writing) so that images recorded on DVD-RAM disc cannot be accidentally deleted and the disc cannot be initialised.

Howling:

This phenomenon occurs as follows: When the DVD Video Camera is connected to a device, such as TV, the audio input to the microphone of DVD Video Camera is amplified and output from the speakers of TV, and the signal is again input to the microphone: This is repeated to form an endless loop of audio signal, and the signal is amplified up to the audio output amplitude limit of the device. Howling can be prevented by changing the positional relationship between the DVD Video Camera and TV, or by turning down the volume on TV.

Suspending PC:

This function stores the status of PC before it is turned off: It will restart the work from the status immediately before PC was turned off, when the PC is turned on next time.

Video selector:

This device can input multiple audio and video signals, and select the desired audio and video signals among those input, to output them.

Finalise:

This process makes a DVD-R disc recorded on this DVD Video Camera playable on a DVD player, etc. that conforms to 8 cm DVD-R: No further recording can be made on a finalised DVD-R disc.

MultiMediaCard:

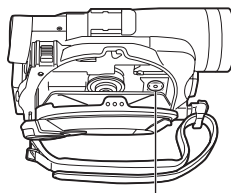
This is a memory card standard jointly developed by Siemens and SanDisk in 1997. The card is 32 mm long x 24 mm wide x 1.4 mm thick, and has 7 pins. It can be inserted into SD Memory Card slot and used.

Linear PCM recording:

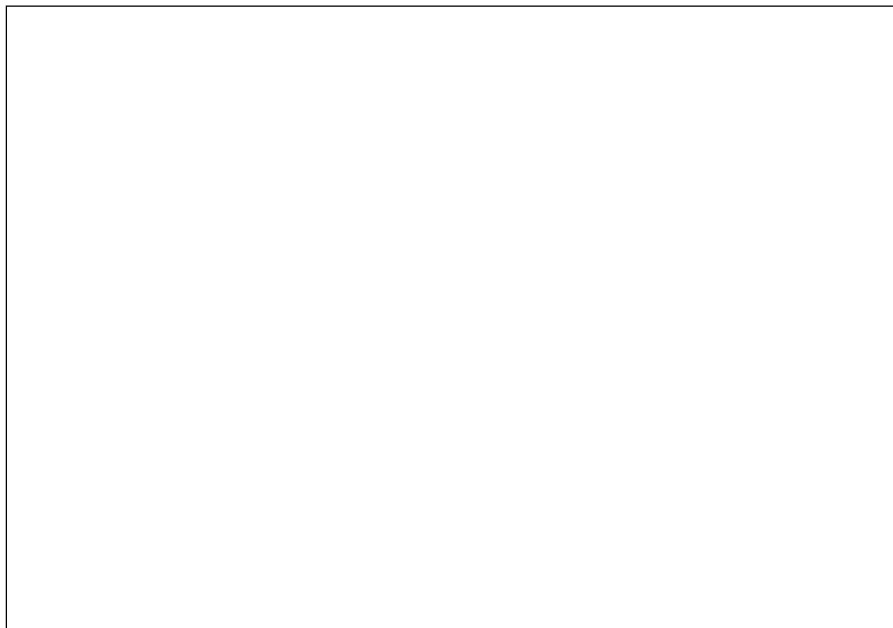
Audio recording format similar to MPEG1 Audio Layer 2: However, Linear PCM does not compress an audio signal, but instead samples it and converts it to a digital signal to be recorded. Therefore, the amount of data used is larger than that of MPEG1 Audio Layer 2.

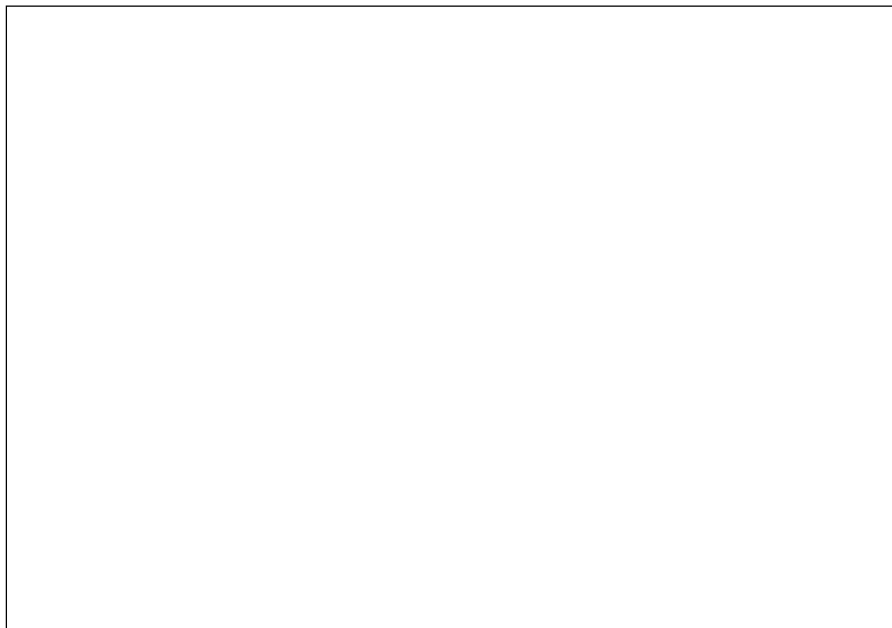
Laser pickup block:

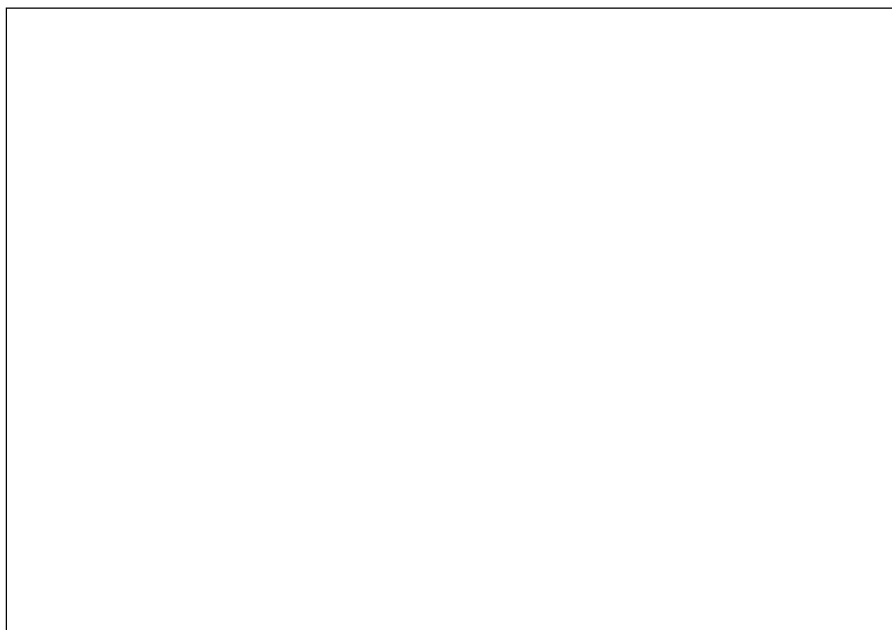
This block emits laser beam to a disc, and then collects the laser beam reflected from the disc to convert it to an electric signal. The block consists of a laser, lens, receiving element, etc.



Laser pickup block









VQT0K98
(QR35236)

Matsushita Electric Industrial Co., Ltd.
Web Site: <http://www.panasonic.co.jp/global/>

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